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ADDRESSES AND ORIGINAL ARTICLES

BRIGHT'S DISEASE.

THE UNITY AND RELATIONSHIPS OF TOXIC NEPHRITIS.

By Hugh Gainsborough, M.D. Camb.,
F.R.C.P. Lond.,
PHYSICIAN TO ST. GEORGE'S HOSPITAL.

RECENTLY much attention has been given to the classification of Bright's disease, with some tendency to an increasing subdivision thereof. Further, a particular dispute has arisen as regards the relationship of nephrosis and nephritis. One recent classification presents an entirely new nomenclature (D. Russell [1]).

Some degree of clarity has emerged, as for example the abolition of such a name as chronic interstitial nephritis, and descriptions of nephritis by the colour and size of the kidney. New classifications have been based on either the histological picture (Russell) or on this in correlation with the main clinical features (Addis [2]). The use of old and new classifications at the same time is confusing, and their multiplicity suggests that they are not yet based on sound natural divisions, if indeed such exist. In all schemes there are no definite borderlines between the divisions, which hence are grouped arbitrarily in such a way as to accentuate certain main differences, just as the solar spectrum is divided into groups of wave-lengths corresponding to our main visual perceptions of colour but without acknowledgment of the gradual transition of wave-length. Some classification of Bright's disease is essential for the convenience of the observer and for descriptive purposes, for the determination of the appropriate therapy, and for the acquisition of knowledge of ætiology, pathogeny, and particularly of prognosis.

So far no scheme is entirely satisfactory when considered from all points of view, and this is perhaps not surprising. Histological examination, however well correlated with the clinical standpoint, must rely on those cases which die; but death is not, as it were, evenly distributed among the so-called "types" of the disease, nor is it easy to build up a composite histological picture of the changes which occur in one case from material obtained from different cases at different stages. Even if this difficulty were overcome there are still other troubles in comparing clinical aspects—two cases might present histological features that are very similar, yet in one massive œdema is present, in the other absent. The clinical aspect is further confused by the reliance on so-called tests of renal function which are generally too coarse. A petrol engine may fail to yield its full power for many reasons, there may be increased friction in many parts, or the damage might be in one place, nevertheless the effects of diverse "lesions" on power output might be the same. Addis [3] introduced a method of estimating the amount of reduction of renal tissue, but identical degrees of reduction can be produced by various lesions, and advanced chronic patchy inflammation may reduce the renal capacity as much as an acute diffuse affection. Other methods of estimating renal function—as for example the estimation of blood-urea—are still less adequate, for increase of blood-urea only occurs when the "renal tissue" is reduced by at least 50 per cent.[4] Thus urea retention provides a very arbitrary standard for the comparison of cases of nephritis. Loss of renal function cannot yet be correlated with the histological appearances, the effects on renal excretory capacity of reversible or irreversible changes cannot be estimated, glomeruli normal or almost normal to the eye may yet be leaky filters, as indeed they must be in "genuine" nephrosis.

Addis and Oliver [2] in a remarkable work have simplified the classification of Bright's disease. Their scheme, which corresponds in many ways to the more subdivided one proposed by Russell, is based on clinical and histological studies of fatal cases, the clinical study by the methods developed by Addis being of special interest. Although the main groups are well distinguished, there is still the limitation of a method dependent on post-mortem material, and such groups seem less well defined when the disease is considered in all the aspects of all the cases which are presented to the clinician.

For the starting point of this discussion, the following scheme corresponds to many classifications. Any term belonging to old nomenclature, such as "small white kidney," will only be used in a rough sense sanctioned by long clinical usage.

(1) *Toxic Nephritis.*
- Acute: (*a*) Focal (non-embolic). (*b*) Diffuse.
- Subacute: Glomerulo-nephritis. Glomerulo-tubular nephritis.
- Chronic: Large and small white kidney.

(2) *Nephrosis.*
- "Genuine" or "lipoid" nephrosis.

(3) *Arterio-sclerotic.*
- (*a*) Senile (benign nephro-sclerosis). (*b*) Primary contracted kidney (malignant nephro-sclerosis).

The last group will not be discussed in this paper.

The groupings of "toxic" nephritis are rough divisions based on the acuteness or otherwise of the disease process, and it is often difficult to know into which of neighbouring categories a given case should be placed. It is particularly in this lack of definition between the groups that the failure of such classifications is most apparent.

ACUTE NEPHRITIS.

Most of the cases called acute nephritis are cases of acute diffuse glomerulo-nephritis and are represented typically by scarlatinal and tonsillogenous forms. A group of cases has been defined as due to acute *focal* glomerulitis and these are marked by hæmaturia and by a high probability of recovery, and are distinguished clinically from acute diffuse glomerulo-nephritis by the absence of œdema and hypertension and by occurring earlier in the course of an infection such as tonsillitis. Histologically these cases show focal and even partial involvement of the glomeruli, but it is clearly difficult to draw any line between acute focal and acute diffuse forms: histological differences, based on such rare specimens as die, depend on the ***amount*** of change and the ***number*** of glomeruli involved, and these are questions only of degree, and in a disease in which a fatal issue is so rare clinical evidence might well be more valuable. But from this aspect we see that both focal and diffuse forms can occur from one common cause such as malaria or relapsing fever, that the absence or presence of œdema can afford no critical division between the forms since the beginnings of tissue œdema are invisible, that hypertension may be absent in acute diffuse glomerulo-nephritis, and that in the late stages of diffuse glomerulo-nephritis the reticular or patchy rearrangement of

the kidney substance would indeed suggest that the initial injury had not been equally diffused.

Thus acute focal and diffuse forms may well have a common causation, and the differences between the two forms are only a matter of degree.

NEPHROSIS.

The distinction between chronic glomerulo-nephritis and "genuine" nephrosis is still less well defined, while the similarity between these groups is very striking. Elsewhere [5] I have expressed the opinion that there is no justification for separating off a group of cases as "genuine" or "lipoid" nephrosis, but as this conception still holds sway in many quarters, certain aspects of the argument are worth repeating and extending. I would here quote from Leiter's [6] review of the subject:

> "The nephrotic syndrome seems to be well established clinically and pathologically as something not directly related to glomerulo-nephritis or inflammatory renal disease, though commonly associated with it. In its *primary*, uncomplicated form, this syndrome is known as nephrosis and is a rare *disease*. The rarity of this disease, however, is no justification for the denial of its existence." (I have rearranged the italics.)

In brief, the main features of nephrosis comprise a chronic degenerative lesion of the renal epithelium in which glomerular change is slight or invisible, a prolonged course marked by œdema and the absence of hæmaturia, hypertension, or nitrogen retention, and the occurrence of heavy albuminuria. The albumin to globulin ratio in the urine is about 20 to 1, and if this is compared to the albumin to globulin ratio in the plasma (viz., 2 to 1) it is easy to realise that the proteinuria leads to a relative depletion of the plasma albumin. The plasma, apart from low albumin content, often contains an actual increase in globulin and fibrinogen content, and this has been explained by the results of plasmapheresis experiments in which it has been shown that fibrinogen and globulin are more easily regenerated in the plasma than albumin. Thus ensues a lowering of colloidal osmotic pressure from the loss of albumin and this is not balanced by the increase of globulin, for this protein with its greater molecular weight has relatively a smaller effect. The normal colloid osmotic pressure of the plasma is about three times the capillary blood pressure, but in these cases it often falls to below this latter value. This change is probably the main cause of the anasarca, which though a principal feature of the disease, is relapsing in character and may be absent for long periods. Clearly, considerable plasma albumin depletion can occur before the colloid osmotic pressure is sufficiently lowered for this cause of œdema to be operative. Changes in sterol metabolism occur including gross hypercholesterolæmia, increase of cholesterol ester content of the kidney, and increased cholesterol excretion in the urine. There may also be a lowered basal metabolic rate, even in the absence of œdema, and often a moderate degree of leucocytosis.

Now all these features are frequently seen in cases of subacute glomerulo-nephritis or large white kidney, but in these cases the period in which the clinical and metabolic state is indistinguishable from the above described syndrome may be preceded or associated with slight hæmaturia. Later, however—it may be months or years—as the renal changes progress towards sclerosis, the picture changes, the tendency to œdema vanishes, the hypercholesterolæmia returns to normal, and hypertension and nitrogen retention appear, though not necessarily simultaneously. With hypertension may follow rapidly advancing changes in the fundus oculi and in the size of the heart, and when persistent nitrogen retention is obvious the case is approaching death in uræmia. Sometimes a gross nitrogen retention passes off for a time, but it almost always recurs, and the ultimate end seems unavoidable. Both in such cases of subacute glomerulo-nephritis with the so-called nephrotic tendency, and in so-called genuine nephrosis a large proportion of cases manifest, as a usually fatal complication, pneumococcal or streptococcal infections, more commonly a peritonitis but sometimes an empyema or an erysipelas. This is well shown in the cases reported by Fahr.[7]

The fate of cases described as genuine nephrosis is still somewhat doubtful. Some cases undoubtedly recover, but the majority die with septic infections as just described. "True uræmia never occurs," says Leiter [6]; but then of course the case would not be one of "genuine" nephrosis, by definition!

The general clinical similarity of "genuine" nephrosis and some forms of subacute glomerulo-nephritis is indeed very close, the differences are sometimes very little, and it is possible to find a series of cases of subacute glomerulo-nephritis presenting to an increasing degree the nephrotic syndrome. Such cases have been termed nephritis with nephrotic tendency (nephrotische Einschlag) and are considered by some authors as a mixture of two diseases or disease processes (Murphy and Warfield [8]). Recent reports of cases of "genuine" nephrosis are so scrutinised by critics that the least departure from the definition of the disease is sufficient reason to relegate a case from the group of nephrosis to that of nephritis, and a blind eye is turned to the overwhelming degree of similarity—e.g., Murphy and Warfield's [8] criticism of some of Dyke's [9] cases, and Leiter [6] on Bell.[10] It is, in fact, difficult to find cases which satisfy all criteria, and such cases as do so are almost always cases which have either recovered, or terminated, as it were accidentally, from an infection. What would happen if infection did not occur is yet to be discovered. It is important here to note that the cases of glomerulo-nephritis which present at some time the nephrotic syndrome in purest form are those cases which have the longest course and greatest chronicity.

The argument for including nephrosis in the group of glomerulo-nephritis has been detailed from both clinical and histological view-points by Christian [11] and by Bell.[10] The latter demonstrated by a beautiful technique the histological relationship of nephrosis and glomerulo-nephritis. The histological changes which characterise "genuine" nephrosis, an almost pure epithelial degeneration, equally occupy the picture in the early stages of subacute glomerulo-nephritis, even if more definite inflammatory changes, in varying degree, are present as well. Bennett and co-workers [12] find no adequate reason for distinguishing between the three cases of nephrosis reported, although one died in uræmia with a histological picture more resembling nephritis. They say that the separation of this case from the others, suggested on anatomical grounds, "becomes illogical and insufficient when all aspects of the case are fully reviewed."

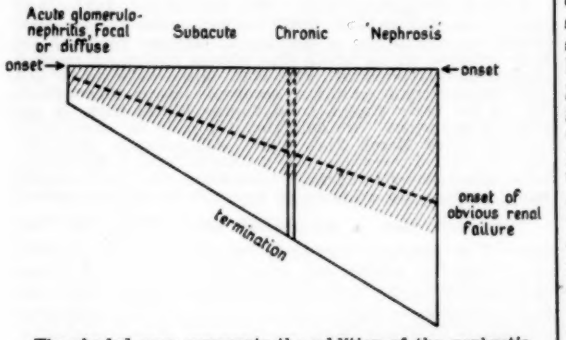
Lohlein [13] and Bell [10] believe that nephrosis is only an example of chronic glomerulo-nephritis, whereas Elwyn [14] thinks that nephrosis *follows* acute diffuse glomerulo-nephritis. The former view, that nephrosis is part and parcel of glomerulo-nephritis, seems to me the only possible explanation, and it is quite unnecessary to assume that it is,

as Elwyn suggests, a sequel of an acute diffuse nephritis which has healed atypically leaving purely degenerative processes.

IDENTICAL NATURE OF ALL FORMS OF TOXIC NEPHRITIS.

In discussing the relationships of different forms of glomerulo-nephritis confusion arises from the use of the terms acute, subacute, and chronic; sometimes these terms are used in the sense that a chronic or subacute process may follow an acute one, sometimes in the clinical sense of the duration of the disease, sometimes as an index of the severity of the inflammatory process in the kidney. It seems to me simplest to use these terms as signifying rate of progress of the disease, by which means one becomes independent of such an extremely variable figure as the actual duration. Each case appears to have an average rate of progress, whether considered from a clinical or histological point of view, and it is this that determines the "type" of the case, but of course the actual rate varies at times by exacerbation or quiescence.

I believe that "genuine" nephrosis and all forms of glomerulo-nephritis are essentially of the same nature and are caused in a similar manner (even though the activity and nature of the actual causal agent may be different), and that the difference between the various groups is mainly one of degree, determined by the average rate of progress of the disease. Each and every case tends, as a case of



The shaded area represents the addition of the nephrotic syndrome.

"nephritis," towards renal failure evidenced by nitrogen retention and hypertension and on each case is superposed a variable amount of the "nephrotic" syndrome, with its metabolic changes the sequel of proteinuria. In acute forms of nephritis the nephrotic syndrome is hardly manifested at all, in less acute forms this syndrome becomes increasingly apparent but overlaps in varying degree the more obvious signs of renal failure. In chronic cases the nephrotic syndrome occupies to a large degree, or entirely, the whole clinical picture, and ordinary signs of nephritic failure may never appear because the cases either die of infection, or recover, before such can occur. In other words "genuine" nephrosis can only occur when the underlying nephritis is so mild that renal sclerosis and its symptoms do not complicate the development of the nephrotic process. This conception can be represented diagrammatically as shown.

The ordinates represent in a rough way the duration of the disease, and different cases can be represented by narrow vertical columns. The classical groups are represented by the headings, no lines of demarcation being drawn between them. The scheme demonstrates the transition from one end of the scale, representing acute hæmorrhagic nephritis of relatively short duration, to the other end, representing the more chronic forms in which, for reasons already given, the nephrotic syndrome comprises almost the whole or the whole of the picture.

The "metabolic" addition of nephrosis is represented in values which gradually increase as the duration of the renal disease allows its more complete development. Each case presents a progressive loss of renal function, though not necessarily an even progression, till below the dotted line the renal failure becomes obvious by the coarse manifestations of nitrogen retention and hypertension. In acute cases the clinical picture is dominated from an early stage by this "nephritic" syndrome, in subacute cases this syndrome appears later but generally overlaps more or less whatever degree of the "nephrotic" syndrome that is present, in the most chronic cases coarse renal failure *follows* the nephrotic stage if the development of the case has not been interrupted by death or recovery.

Below the dotted line the scheme suggests that gross loss of renal function in the most acute and in the more chronic forms is identical in nature and uniform in effect, whatever may be the activity or nature of the toxin (assumed or known), and whatever may be the histological changes present.

Cases which are widely separated in the scheme may well have an identical causation. Excellent examples of this were seen in trench nephritis. Here, some cases were marked by fever, hæmaturia, and slight œdema, others were less sudden in onset, had little hæmaturia, but anasarca and a more prolonged course provided the main features. "The general manifestations of the disease—epidemic occurrence, generally febrile onset, bronchitic phenomena, frequent splenic enlargement—all point to a primarily infectious origin of the disease" (Fishberg [15]). It must be very probable that, whatever may have been the predisposing causes of such an epidemic, the infecting agent was unique yet it could produce glomerulo-nephritis of such different types.

These considerations compel us to look for some unity in the cases, however much the outward manifestations differ; and by a mental exclusion of the nephrotic addition, such unity is clearly shown in this scheme, whereby the differences are emphasised as a matter of degree, and an expression of the average rate of progress—this being probably the resultant of the intensity or activity of the toxin and the humoral and tissue resistance.

Probably the best examples of "genuine" nephrosis have been presented by cases of luetic origin. These do not need separate classification for, in accordance with our knowledge of the extreme chronicity of processes due to such infection, renal change would be expected to be equally slow, so slow in fact that measurable loss of renal function is rarely demonstrated. Yet even here a case I have observed presented a retinitis albuminurica at about the time of the abatement of an anasarca which had lasted thirteen months. Complete recovery occurred in this case even though a fresh luetic infection was acquired soon after his discharge from hospital.

In terminal stages of the disease, hypertension results in arterial and arteriolar changes, retinitis, and enlargement of the heart. The two former of these changes can be produced sometimes so rapidly that it is difficult, in the absence of further proof, to believe that they are expressions of increased

mechanical strain acting solely, but that, in some other way, the renal lesion must be responsible therefor. However it may be produced, advanced vascular changes may alter the histological picture and produce, as it were, an added ischæmic nephritis.

In the diagram one column is partly represented by dotted lines to correspond with the initial stages of the disease. Such cases are those of small white kidney, or secondary contracted kidney, or nephritis repens (Russell [1]). As a rule these cases are observed only in terminal stages, the initial stages are so devoid of symptoms that the patient often fails to note the onset of the disease. If œdema is absent, hæmaturia and albuminuria can easily be overlooked. In such cases the loss of plasma albumin is probably insufficient to lower the colloid osmotic pressure below the capillary hydrostatic pressure; it is to be remembered that normally there is a large margin in the excess of the former, and as a result the sum total of the factors which produce œdema do not reach a sufficient value. In other respects these cases in no way differ from neighbouring cases in which œdema has been present, except perhaps in the consequent lack of treatment. These cases proceed to advanced changes in the renal structure in which the final fibrotic processes may be patchy (reticular) or diffuse. The terminal stages are often complicated by severe ischæmic nephritis.

It is to be noted that every case of toxic nephritis is essentially azotæmic, and that the superposition of "nephrosis" in sufficient degree provides the so-called hydropigenous forms. Clearly then it is useless to divide nephritis into azotæmic and hydropigenous forms.

PROGNOSIS.

The prognosis of toxic Bright's disease confronts us with difficult problems. At the one end of the scale the acute and grossly hæmorrhagic forms present an exceedingly good outlook, recovery occurring sometimes very quickly and sometimes a matter of months. Occasionally the treatment of sepsis—e.g., by removal of septic tonsils—seems to be necessary, and the temporary exacerbation of symptoms which so often follows suggests a correct location of the cause. However, as one proceeds along the scale to less acute and chronic forms, the ultimate prognosis seems to be much more grave. Cases which manifest definitely the nephrotic syndrome, apart from the risk of death from infection, show progressive renal destruction, and a termination in uræmia. The prognosis of the "pure" nephrotic cases has already been suggested.

These prognoses are very puzzling, for apparently the less active processes of subacute forms present a worse outlook than that of the most acute cases. This does not appear to be the effect of the "nephrosis," for though Barker and Kirk [16] thought that renal changes could follow experimental depletion of plasma proteins, this has not been confirmed by Leiter.[17] Possibly the prognosis depends to a considerable extent on the persistence or disappearance of the causal "toxin." Acute nephritis following scarlet fever or acute tonsillitis is generally of excellent prognosis, as if the disappearance of the causal infection determines recovery. Nevertheless, though in some cases a toxin of streptococcal origin seems to be well evidenced as a cause in tonsillitis and scarlet fever, the existence of a toxin in other cases is merely assumed by analogy. Unfortunately we are not in a position to gauge the persistence or otherwise of the toxin, and the prognosis in an individual case can only be roughly guessed. Nevertheless the possibility of recovery is present in cases in which the "group" prognosis is usually bad. I would quote three such examples.

CASE 1.—Male aged 53. Œdema of feet appeared in December, 1926. Urine albumin +. No hæmaturia. B.P. 120/80. Œdema soon vanished but recurred at intervals for the next twelve months. Wassermann reaction negative. By June, 1927, there was a syst. B.P. 150, blood-urea 0·03 per cent.; a small hæmorrhage appeared in left retina in August, 1927, B.P. 180/110, and a month later there was definite "arterio-sclerotic" retinitis which by January, 1928, had become typical "renal" retinitis, with B.P. 210 syst., and blood-urea 0·037 g. per 100 c.cm. In May, 1928, the B.P. was a little lower, there was some improvement in the fundi, blood-urea 0·06 g. per 100 c.cm. In November, 1928, the retinal changes had almost completely disappeared though albuminuria was still quite persistent. Since that date the retinæ only show slight vascular change, the B.P. has steadily fallen to a constant level of about 145/90, the albuminuria has progressively diminished, there is none at present, and during the past six months faint traces only have been occasionally detectable.

CASE 2.—Male aged 37. Œdema first noticed May, 1929, when the urine was found to contain a little blood and much albumin. The œdema steadily increased in amount (though not to anasarca) and persisted for two months. The urine albumin varied from 0·2 to 0·4 per cent. By the end of August, 1929, the albuminuria had vanished but soon recurred, there then ensued a steady increase of B.P., and from December, 1929, to February, 1930, was at a level of about 190/110. No nitrogen retention or change in the fundi. Since then there has been a steady fall of B.P. to 130/100 and the proteinuria has vanished completely. The urine now contains no cells or casts.

CASE 3.—Female aged 16. Swelling of face, ankles, and legs appeared Nov. 2nd, 1927. Albuminuria 0·9 per cent. Slight hæmaturia for a few days. Œdema persisted for three months, during which time plasma cholesterol reached a total of 0·37 per cent., syst B.P. varied between 90 and 122, no nitrogen retention occurred. Some leucocytosis during the early stages, total whites 14,840 with 72 per cent. polymorphs. Albumin-globulin ratio in urine 21/1. Tonsillectomy March 21st, 1928. Albuminuria thereafter diminished and there was only a trace detectable two weeks later, when she left hospital. Seen six months and eighteen months later; no evidence of nephritis could be detected.

The first case is somewhat astonishing, for the rapidly advancing vascular changes were so typical of a nephritis which had progressed beyond all hope of recovery, and yet in the past three years there has been progressive improvement (even if one hesitates to speak of cure), with regression of the vascular changes evidenced by the blood pressure and the retinal picture, and with disappearance of the albuminuria.

NOMENCLATURE.

It seems to me to be sufficient at the moment to describe one comprehensive group of toxic nephritis, including a range of cases in which the whole picture varies from the mildest to the most severe affection. The terms mild and severe refer both to the nature of the histological changes and to the average rate of progress. Those cases advancing most rapidly and with the acutest type of inflammatory change are "severe," and those which progress most slowly and with the least acute type of inflammation are "mild." It is understood however that, in a clinical sense, the "mild" cases may present great dangers to life from the addition of the nephrotic syndrome.

Finally I would draw attention to two problems. The first is in respect of the disappearance of the nephrotic syndrome in the later stages of nephritis, for when vascular changes and gross nitrogen retention appear the tendency to œdema and the hypercholesterolæmia vanish. The disappearance of the œdema may be due possibly to diminished loss of

protein, or to changes in capillary states, but even if it is found later that the colloid osmotic pressure does rise above the level where œdema is likely to appear, it is still very difficult in our present state of knowledge to suggest any working hypothesis to explain the fall of the hypercholesterolæmia. The second, which has already been mentioned, is the question as to whether there is a persistently acting toxin or not in progressive nephritis.

CONCLUSIONS.

Toxic nephritis is a disease in which progressive changes in the kidneys, of the most variable severity, are associated with a clinical picture which presents a unity, despite the differences which are due mainly to the length of duration of the process.

From the most acute forms to the mildest forms, every degree of severity can be found, and it is impossible to find natural subdivisions.

"Nephrosis" comprises a clinical and metabolic syndrome which is superimposed upon all cases of toxic nephritis, to a degree depending mainly on the mildness of the nephritis and consequently on the length of time available for this syndrome to develop. The most nephrotic cases are those in which the nephritis presents the mildest histological changes and the slowest rate of progression.

All cases of toxic nephritis present a progressive loss of renal function and tend to terminate in uræmia. In the most nephrotic cases this change is so slow that such cases die usually from intercurrent infection, or recover, before loss of renal function, as usually measured, is recognisable.

The nature of this progressive loss of renal function is identical in all cases of toxic nephritis, whatever the cause and whatever the severity.

I wish to express my indebtedness to my medical colleagues at St. George's Hospital for their kindness in allowing me freely to study and observe cases of nephritis under their care.

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THE FLIGHT FROM THE "COTTAGE HOSPITAL."—To the several instances in which cottage hospitals have recently changed or proposed to change their name to general hospitals must now be added Bexley, in Kent. At the annual meeting at which the change was proposed it was stated that the institution was established "in the days of flannel poultices," and that in consequence of the volume of work the old name is now detrimental. One of the arguments in favour of the change of title to "Bexley and District Hospital" was that larger subscriptions might then be expected from societies "which very often do not look very highly upon cottage hospitals." The matter was remitted for further consideration.

SPONTANEOUS SUBARACHNOID HÆMORRHAGE.*

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SUBARACHNOID hæmorrhage has long been known as an occasional cause of death. From time to time fatal cases came to autopsy in which there had been no injury, and no disease sufficient to explain the bleeding was found. Until lumbar puncture came into general use, however, that is to say the last 15 or 20 years, it was not general knowledge that subarachnoid bleeding not infrequently occurs without causing death. It is true that such an event had been observed. Thus, Gowers,[1] writing in 1888, three years before Quincke introduced lumbar puncture, says: "In slight cases (*of meningeal hæmorrhage*) recovery is possible, as subsequent post-mortem has proved." To-day, thanks to Quincke's work, in all forms of meningeal disorder the condition of the cerebro-spinal fluid can be ascertained at the time of the symptoms and the two thus readily correlated. This has done for the meninges what laparotomy has done for the abdomen; it has made a dark place light, facts have replaced fantasies.

One of the results is that we have now a clear and easily recognisable clinical picture of what is called spontaneous subarachnoid hæmorrhage. This may occur at any age. It has been seen in quite young children, and in elderly persons; it is however most common in early adult life before the blood-vessels have begun to undergo the changes of later years. The person affected is usually in excellent health at the time, and in many cases there is no history of previous illnesses or of any symptoms pointing to head trouble at any time. In a certain number of recorded cases, however, there is a history of head symptoms of various kinds from time to time; this will be referred to later.

The onset, as might be expected, is usually sudden. The patient may fall down unconscious and may remain so until death. As a rule, such unconsciousness usually passes off sooner or later. If there is no actual loss of consciousness the onset takes the form of severe pain in the head, usually in the occipital region. Some patients say that it felt as though they had been struck a violent blow, others, as though something had snapped inside. Sometimes it is less severe at first and soon increases so as to make the patient cry out.

In addition to headache there is usually recurrent vomiting of cerebral type. There is often more or less confusion. There may also be restlessness and general pain. At times the patient is strange in manner and resents interference. A slightly raised temperature which in some cases persists for several days is common. Where there has been a primary loss of consciousness this may pass off in a few hours, leaving the patient confused and complaining of headache and sometimes of pain in the limbs. The pupils may be dilated, contracted, or unequal. There is, as a rule, no paralysis and no sensory change, but hemiparesis or ocular palsy may occur. The condition

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of the reflexes varies. The knee-jerks may be normal, increased, unequal, or as in one of my cases absent for several days. The plantars may be normal, or they may show toe extension on both sides or flexion on one and extension on the other. In one of my cases there was in each foot perfect flexion when the inside of the sole was stimulated, and equally perfect extension on stimulating the outer side. Kernig's sign may be present on one or both sides or it may be absent. The urine often contains a trace of albumin. Sometimes there is a large amount. This so-called "massive albuminuria" is not common. When present it is often misleading as it suggests uræmia, with which these cases have certain points of similarity. It usually disappears in a few days, and as was shown in a fatal case which I saw in 1929, the kidneys may be found to be normal at autopsy.

The fundi may show characteristic changes of great diagnostic value. Intra-ocular hæmorrhages, into the retina or vitreous, or more rarely, choked discs, may be present. Riddoch and Goulden [2] consider that these are due to distension of the subarachnoid space round the optic nerve, with separation of the dural and pial sheaths, causing raised pressure and traction on the vein, and sudden interference with the venous return. Epileptic attacks may accompany the bleeding. Their occasional occurrence during the illness, without evidence of further bleeding, will be referred to later.

In a case presenting the more constant of the above features, a diagnosis of subarachnoid hæmorrhage may usually be made with confidence, and lumbar puncture is indicated at once. As a rule the fluid is found to be at a somewhat increased pressure, and to contain blood in variable quantities. That the blood is not merely due to injury by the needle must be made certain in the usual way by noting that the blood is equally present in three separate lots of fluid, by the absence of clotting, and by the supernatant fluid being blood stained.

Although this condition is often spoken of as "spontaneous" subarachnoid hæmorrhage, yet it is not always quite without an immediate cause, in the form of some increase of excitement or of muscular activity. This may be so slight as to be hardly recognisable, or it may be quite definite, although something less than actual trauma. That there should be an immediate cause is not surprising. If, as is so often the case, it is due to the rupture of an aneurysm, the actual burst is only the culmination of a gradual process of giving way, with coincident attempts at repair. There may be no symptoms until the last defence has broken down. Even then it may be only a minute oozing, perhaps best described as "leaking." In other cases it may be much more than this.

Progress.

The first attack may be very severe and prove fatal without even temporary recovery. On the other hand the onset may be severe with complete loss of consciousness, and after a few hours, or even less, the patient begins to come round. What happens then depends on circumstances. There may be no further bleeding with gradual recovery. On the other hand, further bleeding is liable to occur, which in turn may be recovered from, or may be of fatal severity. Even if kept at absolute rest in bed recurrences may occur, depending on the conditions inside the skull.

Symonds [3] has made a useful division of these cases into four groups according to their severity.

Group 1.—Sudden large hæmorrhages causing apoplectiform effects which go on till death sooner or later.

Group 2.—Initial apoplectiform onset, gradually changing to mental confusion and recovery or possibly death from a further attack.

Group 3.—Milder onset without coma, either getting gradually more severe or improving.

His fourth group is more or less hypothetical and need not concern us here.

The following case is an example of Group 1. It occurred before the days when lumbar puncture was a routine procedure.

CASE 1.—A man of about 40 years, whilst playing in a cricket match, hit a "four" and immediately fell down unconscious. He was admitted to the Sheffield Royal Hospital on August 20th, 1904. On admission he was unconscious and remained so until death. There was stertorous breathing. No squint. Pupils equal, medium size. Conjunctivæ sensitive. No evident hemiplegia. Moves both arms slightly at times. Knee-jerks present both sides —also toe extension. No superficial reflexes obtained. There was a trace of albumin in the urine. He died on August 25th, the sixth day.

At *autopsy* an aneurysm the size of a small pea was found on the left anterior cerebral artery. It had burst in front, and the blood had ploughed up a rounded cavity in the ventral surface of the frontal lobes about 2·5 cm. in diameter. The right was more excavated than the left. It had destroyed the lower part of the genu of the corpus callosum, pushed back the anterior white commissure and just reached on each side to the floor of the lateral ventricle; on the left side it had actually penetrated the ventricle, but there was only very little blood in the ventricles. The chief spread of blood had been along the subarachnoid space, tracking widely over the whole surface—more on the left side than on the right. There was also atrophy of the right kidney, due to an impacted ureteral calculus, but no evidence of chronic nephritis or arterio-sclerosis.

In this case the immediate determining cause was undoubtedly the very considerable muscular effort of hitting a "four," but up to the time of its rupture the aneurysm had shown no signs or symptoms of its existence. Its site is the common one for this type of aneurysm—namely, at or about the junction of the anterior and middle cerebral arteries.

The next two cases come under Group 3.

CASE 2.—On April 21st, 1931, a single woman, aged 35, apparently in excellent health and full activity, on her way home at night had run to catch a tram, and then mounted to the upper deck. Whilst sitting there she suddenly felt an intense pain in the back of the head, neck, and trunk. She had a very restless night owing to pain and vomiting. Temperature 100°. Next morning I saw her with Dr. Paige. The pupils were unequal; the neck was stiff and movement caused pain; the reflexes were normal; there was definite Kernig's sign on both sides. There was a good deal of nervous alarm, but no real mental confusion. Lumbar puncture showed an increased pressure and the fluid considerably blood stained.

She gradually improved in every way, but on April 27th, that is the seventh day, she had more pain in the head and vomiting recurred during the next 24 hours. Kernig's sign, which had practically disappeared, was again marked on both sides and she complained of pain going all down the spine in a quite unusual way. From that time onwards she made a steady recovery and is to-day in her usual health.

This was a typical mild case. The most interesting feature was the return of pain and vomiting on the seventh day. It naturally raised the suspicion of further bleeding, but as it subsided quickly it seems more likely that the increase of symptoms was due to the changes taking place in the blood already in the meninges, and the possible irritant effects of products of metabolism on the highly sensitive membranes. The question of a further lumbar puncture arose, but as the symptoms subsided in a few hours it was not considered necessary.

The cause of exacerbations during the progress of a case is of considerable interest. It is natural to suspect further bleeding, and this sometimes

does occur even in non-fatal cases, but it is not always so.

A somewhat similar exacerbation was seen in the next case also.

CASE 3.—This was a married woman, aged 25. She had not had any previous illnesses. About the end of December, 1926, whilst stooping down to put some coal on the fire, she felt something "snap" in the back of the neck. This was immediately followed by intense pain from the back to the front of the head. She turned faint and had to be carried to bed. Severe vomiting occurred for the next hour or two. The pain was very severe in the frontal region for the next few days, and she had to keep her head upright. If she moved it to either side she said "it felt as if it were full of liquid." During the next two weeks she improved, but on Jan. 16th, just before dinner, she had a severe epileptic fit, followed by intense headache back and front and severe vomiting.

I was asked to see her on Jan. 27th—that is about 21 or 28 days after the original attack (they were uncertain as to the date)—and 11 days after the exacerbation with the epileptic fit.

On Feb. 2nd she consulted Dr. Collier—lumbar puncture was done by him on that day—that is, 17 days after the exacerbation, and between 27 and 34 days after the original attack. He tells me that the cerebro-spinal fluid was then such a faint primrose yellow colour that it could only be recognised in a strong light. Had there been a second hæmorrhage on Jan. 16th it is probable that the fluid would have been more coloured than that. Froin (quoted by Symonds [3]) records a case in which the cerebro-spinal fluid from a non-fatal case (of Group 2 type) showed uniformly yellow on the seventeenth day, and very slightly yellow on the thirty-third day. It seems, therefore, more probable that the exacerbation of symptoms with an epileptic attack which only occurred 17 days before lumbar puncture had not been due to further bleeding.

Dr. Collier, in a private communication, also tells me that besides occurring at onset epileptic attacks during the time of recovery possibly due to absorption of the blood are not very rare, and that, in his opinion, actual recurrences of bleeding in these cases are probably not so common as they are thought to be. It has not been possible to follow up this case.

That recurrent bleeding may occur within a few days, even more severe than the initial attack and yet end in recovery, is suggested by the next case:—

CASE 4.—On Jan. 10th, 1928, I received an urgent call to see a man, aged 36, who was unconscious and thought to be dying. The history was that on Jan. 6th, whilst in full health and vigour, he had suddenly been seized with an intense pain at the back of the head. He got home with difficulty, vomited several times and went to bed. Next day the headache continued, the temperature was 100°, his eyeballs felt tender, and his neck was stiff. On Jan. 9th, though still feeling ill, he got up and went downstairs. In the evening he took some purgative pills. Next day he stayed in bed in the morning, got up to go to the closet, and about midday was found comatose in bed. I saw him with Dr. Greaves at 3.30 P.M., the breathing was noisy, irregular, and of Cheyne-Stokes type, the pupils were small; there was a divergent squint. The pulse was increased in frequency and of low pressure; there was no Kernig's sign; the legs were flaccid, slight toe extension on the right side; no response on the left; no knee-jerks were obtained. The diagnosis of subarachnoid hæmorrhage was confirmed by lumbar puncture. The fluid flowed freely and was blood stained throughout.

During the next few hours the coma passed off. It was followed by complete confusion, which with pyrexia continued for about a fortnight. As the confusion diminished he developed a condition resembling Korsakow's syndrome which persisted for several weeks and was a source of great anxiety to his friends. It passed off completely in time, and to-day, four years later, he is in active work.

In this case there was a primary bleeding on Jan. 6th, and there can be little doubt that further bleeding occurred on the 10th, that is, on the fifth day. The effects on the second occasion seem too severe and too prolonged to be explained in any other way.

A second point of interest in this case was the prolonged disorder of his mind. It simulated that seen in alcoholic neuritis. For many weeks he had complete loss of memory for recent events, together with surprising powers of confabulation. Although apparently quite well in his general health, yet if asked what he had done the day before, he had not only entirely forgotten, but with perfect assurance, would describe entirely imaginary events in detail.

The occurrence of Korsakow's syndrome in this condition was first recorded by Goldflamm.[4] His experience is that it always clears up in time, and this case fully confirmed his view. Another point of interest in this case was the pain in the back of the eyeballs. Although no intra-ocular hæmorrhage or choked disc was found, it is probable that this pain was due to the distension of the subarachnoid sac around the optic nerve.

The next case, though by itself not in any way unusual, is of interest in connexion with the pathology of this condition.

CASE 5.—On Jan. 6th last I was asked by Dr. Norton Milner to see a single woman, aged 46. She had never had a day's illness since childhood. During the night of Dec. 27th she got out of bed and was heard to fall. They found her unconscious on the floor. By the time Dr. Milner saw her she had recovered consciousness but was confused, although able to answer questions. She had vomited several times. Temperature 100°. She complained of violent pain in the right side of the head. There were no abnormal physical signs. She was kept in bed and, except for the headache over the right temple, seemed to be improving. On Jan. 6th, about 3 A.M., that is 11 days later, she was again heard to fall, and again was found on the floor unconscious. This time Dr. Milner noticed a slight left facial paralysis.

When I saw her later in the morning she was quite rational and talked sensibly. She complained of pain over the right temple, and also told us that after the first attack she had had severe pain at the back of the neck and down her back. There was a slight left facial paresis, the grasp of the left hand was weaker than that of the right. The knee- and ankle-jerks on the left side were more marked than on the right, and although there was no definite toe extension on either side, yet while the response on the right was definitely flexor, that on the left was indefinite. No changes were seen in the fundi. There was a trace of albumin and the temperature was slightly raised. From the history alone a diagnosis of subarachnoid hæmorrhage was probable, and this was confirmed by finding the cerebro-spinal fluid uniformly blood stained.

Dr. Milner tells me that she made a steady recovery and is now in her ordinary health.

At the time that I saw this patient on Jan. 6th last, I was told by her relatives that her mother had a somewhat similar attack in 1913, and that I had seen her at that time. The following record of the mother's illness is from my notes taken at the time.

CASE 6.—On May 2nd, 1913, I saw her with the late Dr. Shea at Chesterfield. She was then 62. Five days before, on May 17th, she had suddenly fallen down unconscious and pulseless. There was severe vomiting; no local paralysis; pupils small and equal. She came round in about half an hour, complaining of intense occipital pain. Since then she has been more or less drowsy and stuporose. The urine is scanty and contains a little albumin. In the right fundus oculi there is a large hæmorrhage lying across and below the lower half of the disc, and another smaller one near the upper edge. The temperature is slightly raised. No paralysis or sensory loss.

At that date, nearly 20 years ago, the clinical picture of this syndrome was not familiar, and lumbar puncture was not a routine procedure. The case puzzled us a good deal, the diagnosis seeming to lie between uræmia and a cerebral thrombosis in some silent area. At any rate I made a special mark on my notes to follow up her after-history. Three years later, in 1916, I heard, to my surprise, that she had recovered completely without any paralysis and that the ocular hæmorrhages had cleared up. Again in 1924, that is 11 years after the attack, I was told that she was quite well. As a matter of fact she lived until 1930; that is for 17 years.

Here, then, is a clear instance of spontaneous subarachnoid hæmorrhage in two members of one

family, mother and daughter. Both occurred rather later in life than is common in this type of case. The diagnosis in the daughter's case was made certain by finding blood in the cerebro-spinal fluid. In the mother this was not done, but there is not the least doubt as to the nature of her attack. Not only were the symptoms characteristic but the finding of intra-ocular hæmorrhages, which eventually cleared up, is almost as strong a confirmation as would have been the presence of blood in the cerebro-spinal fluid.

The question of a family tendency is of much interest in connexion with its ætiology. Gowers recorded its occurrence in two brothers. Dr. Greenfield in a private communication tells me of another instance, not as yet published, "in a woman of 54, whose daughter had died at the age of about 20 from what was thought clinically to be influenza, but was found post-mortem to be a ruptured cerebral blood-vessel." Another suggestive family series has been recorded by Goulden and Riddoch.[5] If, as is generally agreed, many of these cases of subarachnoid hæmorrhage are due to the leaking of a so-called "congenital" aneurysm, it would seem likely that from time to time more than one such would occur in the same family. Perhaps the term "developmental" or "familial" would apply more fitly to them than "congenital."

Some interesting observations have recently been made by Wiley Forbus [6] on the origin of these miliary aneurysms of the superficial cerebral arteries. In a case with multiple aneurysms in the circle of Willis, he found that all of these were situated at similar places—namely, at the point of the acute angle where there is a bifurcation. He also found that the walls of the aneurysms contained no tunica media. He then examined other arteries (from the same case) in which there was no aneurysmal dilatation, and found that in a number of identical positions there were similar gaps in the continuity of the tunica media. Similar gaps were also present at similar points in specimens from other cases of cerebral aneurysm, and also in the vessels from other persons in which there was no aneurysm at all. They were also found from time to time in the coronary and mesenteric arteries.

These defects of the muscular coat were only found at the points of bifurcation. They showed no signs of inflammatory changes, arterio-sclerosis, or external trauma. He therefore concludes that the actual aneurysmal sac is an acquired lesion arising from a congenital defect of the muscularis: that it is probably contributed to by a gradual degeneration of the elastic membrane, due to continued over-stretching of this membrane. In some the defect does not lead to aneurysm, in others aneurysm may be present, but it has not ruptured, whilst in still others it is the rupture of the aneurysm due to the defective muscularis that has caused the immediate symptoms. These observations of Forbus have been confirmed by Greenfield [7] in five cases of intracranial aneurysm.

It may be objected that in my two cases it is difficult to exclude arterio-sclerotic changes in the mother at 62 years of age. It seems even more difficult to imagine an arterio-sclerosis of such severity as to lead to a burst, yet causing no further cerebral symptoms for the next 17 years.

The next case, though in many ways similar, differs from the preceding in several respects.

CASE 7.—A single man, aged 28, was sent to me by Dr. Bellamy of Scunthorpe on June 5th, 1930. He had always been an active athletic man. On May 12th—that is about four weeks before I saw him—whilst boxing, he was knocked down by a blow on the head. This stunned him and was immediately followed by a violent headache and vomiting, so that he stayed in bed for the next two days. On the third day he got up and drove his car from Lincolnshire to London. The headache was still present and continued whilst he was in London for a few days. He then drove back again to Lincolnshire. On his return the headache and vomiting became much worse and he stayed in bed for five days. The exact history of the next few days is rather obscure, but he is sure that on May 26th and following days he was much better and going about.

Up to this point the history is not dissimilar to that of some of the slighter cases of subarachnoid hæmorrhage recorded above, except that there was a definite trauma, in the form of a blow, possibly sufficient to have caused actual bruising of the meninges.

On May 30th, that is 19 days after the original attack, the symptoms of which had practically disappeared for some days, he began to have severe pain in the back, thought to be lumbago. During the next two days it gradually got worse extending down both legs. On June 2nd he vomited frequently and frontal headache has been more or less constantly present ever since. He walked into my room on June 5th with considerable difficulty, the legs being very stiff. He complains of frequent cramps in the legs and cannot sit down in the ordinary way with the knees flexed, but has to stretch his legs straight out in front of him on account of the pain. He looked ill, but there were no abnormal physical signs above the legs. There were greatly exaggerated knee-jerks and well-marked Kernig's sign. In one foot there was a doubtful toe extension. No sensory changes; no sphincter trouble.

He was admitted to a nursing home, and in my absence Dr. Skinner kindly took charge for the next 24 hours. Lumbar puncture on the same evening showed no increased pressure, but the first sample of about 10 c.cm. was almost black, the second a deep red, and the third distinctly blood stained. None of the specimens showed any clot after standing an hour. A few hours after the removal of 30 c.cm. of cerebro-spinal fluid the pains in the back and legs became definitely less; and during the next few days disappeared together with Kernig's sign. On June 16th a second lumbar puncture gave primrose yellow colour, with no increase of pressure. He was kept in bed for some weeks and made a steady and uneventful improvement. In July he was practically convalescent. I saw him again about a year later when he was perfectly well in every way.

The complete data for an exact reconstruction of the events in this case are wanting. Whether or not there was a subarachnoid hæmorrhage following the blow on May 12th must remain uncertain. The symptoms and course are consistent with such a view, but unfortunately lumbar puncture was not done. At any rate, whatever it had been, the immediate effects had passed off by May 25th, for he was then and for the next few days going about and felt quite well. It seems clear therefore that the blood found in the spinal theca on June 5th was not there during those days, and that it did not begin until May 30th when the lumbar pain first made its appearance. The condition of the cerebro-spinal fluid on June 5th, which was still definitely red in colour, is consistent with this. Judged by Froin's findings it would be "red" with a hæmorrhage seven days before, but not with one three or four weeks old. On this assumption, everything points to the seat of this bleeding as intraspinal rather than intracranial, and distinct from the original one following the blow. The complete absence of head symptoms at the onset of the lumbar pain supports this. The headache and vomiting which followed in a day or two would be due to the general irritation of the meninges. If this explanation of his illness is correct, it suggests that this man has some tendency to spontaneous meningeal bleeding not limited to one place, and therefore probably not a "leaking aneurysm." This is supported rather strikingly by his previous history. He says that on quite a number of occasions when playing Rugby football he had been knocked out, suffering from concussion and being laid up in bed for some days with head symptoms. Also that following a motor-cycle accident a few years

ago he was diagnosed as having a fractured base. Indeed, his family were so used to his severe head symptoms after an injury that they were not unduly alarmed at the effect of the boxing knock-out in May and did not pay special attention to it.

Spontaneous subarachnoid hæmorrhage of intraspinal origin is very much more rare than intracranial. It does occur from time to time. Michon [8] reports two cases and gives an account of some of those previously recorded. Amongst these, one of them bears some resemblance to my case. This was recorded by Rénault and Foix.[9] A man, aged 25, began suddenly with severe pains in the back and legs like double sciatica. On the tenth day the pains were still present, together with stiffness and weakness in the legs, Kernig's sign, headache, and slight fever. Lumbar puncture on the twelfth day showed blood-stained fluid and relieved the pain. He made a complete recovery.

Treatment.

The treatment of subarachnoid hæmorrhage is necessarily similar to that of other deep-seated bleedings which cannot be directly reached. There are, however, special circumstances arising from its locality which call for certain modifications. In a meningeal hæmorrhage, the danger is not of syncope from excessive loss of blood, but of fatal intracranial pressure from a comparatively small amount. Thus, whilst absolute rest in bed is essential, it is not necessary for the patient to be laid flat, indeed it is better that he should be propped up more or less according to whatever position he finds most comfortable. Whether conscious or unconscious, a free return of blood from the head is of primary importance.

As regards movements likely to be harmful. The patient will probably not move his head much because of the pain or vertigo which it causes. The other muscular movements likely to be most harmful are the acts of sneezing, coughing, vomiting, straining. So far as coughing and straining at stool are concerned, they should be prevented or controlled by ordinary simple measures.

Whilst no unreasonable restrictions should be placed on changing the position of the limbs and trunk from time to time, actual getting out of bed under any circumstances must be absolutely forbidden. This treatment should be continued for the first few days and only relaxed in stringency very gradually, provided no further symptoms arise.

Lumbar puncture is always indicated for the purpose of diagnosis, and to relieve the pressure if raised. As to whether this should be repeated for purposes of treatment, and, if so, how often, there are differences of opinion. Some whose views must carry weight advocate repeated puncture at frequent intervals in order to remove as much of the effused blood as possible. Others consider that repeated puncture is not only uncalled for, but may be actually harmful by disturbing the conditions at the seat of hæmorrhage, and even endangering further bleeding. Seeing the distance of the site of lumbar puncture from the seat of bleeding in the skull, and the nature of the connecting channels, such a danger seems remote. Against repeated puncture as treatment is the discomfort and disturbance that it causes, and the fact that many cases recover without it. Most of these cases used to recover before lumbar puncture was heard of. Indeed, that is the very reason why their true nature was not recognised.

Of the seven cases here recorded, six recovered completely without repeated lumbar puncture. In three it was not done until after the acute symptoms were over, whilst in two it was not done at all. One of the latter died. That he would have recovered had repeated lumbar puncture been used seems highly improbable seeing the severe and extensive damage found at autopsy.

In any individual case the question of death or recovery depends largely on whether the bleeding point is capable of firm closure or not, and this in turn depends on its size and surroundings. These cannot be known during life. My view is that, provided the patient is kept at rest, and lumbar puncture is done at the onset for diagnostic purposes, and incidentally to a sufficient extent to relieve any increased pressure at the time, it is unnecessary to expose the patient to the discomfort of repeated punctures, unless the pressure symptoms persist or get markedly worse. As we have seen, slight exacerbations may occur from time to time, as in Cases 2 and 3, but are probably not due to further bleeding, and disappear when left alone.

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CARDIAC IRREGULARITIES DURING CHLOROFORM ANÆSTHESIA.

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Soon after its introduction as an anæsthetic it was recognised that the use of chloroform was attended by some danger, and that fatalities were apt to occur from its administration. As long ago as 1858, in an analysis of a series of 50 cases of death under this anæsthetic, Snow [1] pointed out the special danger of "paralysis of the heart" occurring in the early stages of the administration. Since then numerous workers have confirmed and amplified these early observations, and in particular the work of Goodman Levy has thrown much light on the mechanism underlying the cardiac arrest in these cases.

Levy [2-5] showed that in the cat, under low percentages of chloroform vapour, gross disturbances of heart action were common. These took the form of multiple ventricular extrasystoles, appearing in large numbers and arising from many foci. They tended to disappear with deepening anæsthesia, but when they were present it was comparatively easy to produce fatal ventricular fibrillation by any one of a number of factors. Stimulation of a sensory nerve, struggling by the animal, and administration of nicotine all favoured the onset of fibrillation, but most fatal of all was the administration during the anæsthesia of small doses of adrenaline.

When fatal cardiac arrest in man occurs under chloroform, its onset is frequently during the first few minutes of the inhalation; it is associated with struggling, and with light anæsthesia rather than with overdosage. It is also specially apt to follow administration of adrenaline.[6] It has been argued that

such features point to the occurrence in man of the same ventricular fibrillation that Levy found to be so common a cause of death in the cat. There has never been complete conviction, however, that the results obtained from work on such an animal as the cat could be transferred *in toto* to man. Gill, for example, in a discussion on one of Levy's papers,[2] contrasts the effects of section of the vagus nerve in man and animals. The present position is probably accurately expressed by Parade [7] in a recent paper: "The conclusion is hardly to be doubted that in chloroform death ventricular fibrillation is involved, though the certain electrocardiographic evidence for man is lacking."

The results presented in this paper are the outcome of an attempt to follow electrocardiographically the effects on the heart of chloroform administration in man. While such observations under ether or gas and oxygen are comparatively common in the literature, I can find but four previously published reports on comparable studies in chloroform cases.

The earliest of these was a case reported by Ritchie [8 9] in 1912, where records were taken by polygraph from a man of 19 years undergoing operation for femoral osteomyelitis. Thirty minutes after induction the pulse-rate rose to 227 per minute, and the jugular tracing showed waves at double that figure. This attack of probable auricular flutter gave way in three minutes to auricular fibrillation, and two minutes later there was return to normal rhythm at 125 per minute. Further progress was uneventful.

In a second case, reported by Hecht and Nobel [10] in 1913, ten electrocardiograms were taken from a girl of 6 years undergoing operation for mastoid suppuration. The operation lasted 30 minutes, and anæsthesia throughout was by chloroform. Beyond slight slowing of the rate, no change whatever was noted in the records.

The third reference is to a series of cases reported by Cluzet and Tixier [11] in 1919, of which six were under chloroform anæsthesia, all young and without heart disease. In all, marked cardiac slowing, even to half the original rate, was noted. In two cases there were frequent extrasystoles, negative in lead II. There was usually a slight diminution in the height of the "three main waves" of the electrocardiogram (? P.R.T., or ? R.S.T.). In their summary, the authors state that chloroform in the stage of muscular relaxation produces cardiac slowing and sometimes extrasystoles, but none of the serious electrocardiographic disturbances observed in the dog. (The changes referred to in the dog were described by Cluzet and Petzetakis [12] as "of the nature of heart-block, with pauses as in Stokes-Adams disease.")

Lastly, Unger and May,[13] in a paper dealing with avertin anæsthesia, refer to one case where chloroform was used. As no mention is made of any abnormality in the records, one may conclude that disturbances were absent.

It will be noted that in none of these papers is any light thrown on the interesting question of the behaviour of the heart during early induction.

MATERIAL AND METHODS.

Electrocardiograms have been taken in a series of 41 patients* undergoing major surgical operations. Thirty-seven of the cases were under general anæsthesia, chloroform being employed in 17. Though chloroform was only used throughout the operation in a few of these, in 16 the cardiac mechanism during the induction period under this anæsthetic was studied by string galvanometer. The other anæsthetics employed were ether, gas and oxygen, ethyl chloride, avertin, and in a few cases spinal anæsthesia or local infiltration with novocain. The ages of the patients in the chloroform group varied from 11 to 66 years, the majority, however, being about 60 (actual ages: 11, 15, 18, 25, 38, 38, 55, 56, 59, 59, 61, 62, 63, 63, 64, 65, 66). With one exception, all these patients, after a full clinical examination, were considered to have normal cardiovascular systems. The exception was a man of 65 years, with a history of palpitation, a slightly enlarged heart, and raised blood pressure (150/90 mm. Hg). The high average age of this group is due to the type of operation involved. Induction with chloroform is seldom used in these wards except as a preliminary to intratracheal ether, the anæsthetic of choice in such operations as excision of cervical lymph glands. It follows that practically all the chloroform cases were patients with enlarged cervical lymph glands, generally malignant, and the average age of the patients was therefore high.

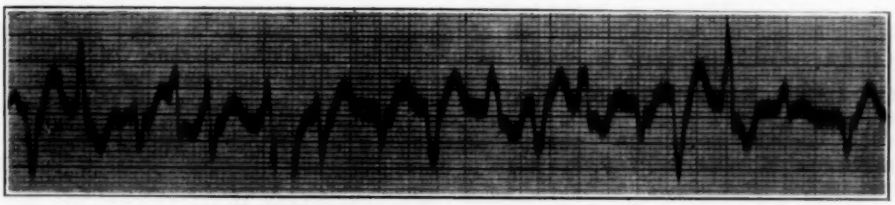
The electrodes—silver plates, 6 in. × 1½ in., coated with silver chloride in the electrolytic bath—were bound to the patients' limbs with lint pads soaked in saline. Usually all three leads were available. Connexions to the string galvanometer about 150 yards from the operating theatre were by overhead wires; signals and telephone circuits were separately wired. Resistances generally were low, and little interference from extraneous currents was experienced. In the majority of cases the electrodes were applied and control records taken while the patient lay in the ante-theatre, before induction was started. The electrodes were left on throughout operation, and the fibre of the electrocardiograph was under constant observation. Records were taken at frequent intervals, and at once if changes in rate or rhythm were observed. Special points in the operative technique were indicated by signal, and records were taken during manipulation of viscera.

SUMMARY OF RESULTS.

The chloroform results only will be considered here, the results of the whole series being dealt with in greater detail elsewhere. The induction period with chloroform was observed or recorded 16 times. Of these, three cases showed no abnormality in the records, while three others showed merely minor alterations, such as bradycardia, or abolition of the P waves. In one case the rate increased from 115 to 160 per minute during induction, a sinus tachycardia without other change. In one other case the control records showed numerous ventricular extrasystoles, and records during induction and later in anæsthesia showed little change. But in the remaining eight cases, seven of whom had previously yielded physiological control records, marked disturbances appeared. One case, a boy of 18 with healthy cardiovascular system, developed marked sinus arrhythmia, with disappearance of P waves during the slow periods. This condition developed 12 minutes after the start of the administration, and lasted less than half a minute. It did not recur, and was not attended by any signs of clinical importance. In seven cases gross disturbances arose in the form of multiple ventricular extrasystoles. These varied in number from an occasional ectopic beat to as many as 146 in two minutes, and arose in some cases from many

* The cases observed were patients in the clinic of Prof. D. P. D. Wilkie, to whom I am indebted not only for permission to publish these records, but also for the facilities afforded me throughout in his wards and theatre. The records were made in the electrocardiographic department of the Clinical Laboratory, also in the Royal Infirmary, Edinburgh.

foci in both ventricles. Bigeminal and trigeminal forms of coupling were common, and on occasion such bizarre records as that figured (see Figure) were obtained. In six of the cases the extrasystoles arose during induction, in five spontaneously, and in one after intentional vagal stimulation (carotovagal pressure). In one case the appearance of extrasystoles was delayed until full surgical anæsthesia had been reached, and in this case they recurred for half an hour; but here there was definite respiratory embarrassment. In all the others their appearance was transient, and after a period of wild disorder the heart settled, with deepening anæsthesia, to a normal sequential rhythm. The appearance of extrasystoles in large numbers was sometimes associated with struggling. It is noteworthy that in none of these cases did the condition of the patient give rise to alarm. The pulse-rate was certainly raised, but the colour and condition remained satisfactory, and administration of the anæsthetic continued quietly.



Electrocardiogram, lead II. Male aged 66. Record taken after seven minutes' chloroform administration. "Multiple ventricular tachycardia": rate 150 per minute.

In the patient known to have mild cardiac disease, the picture was further complicated by several paroxysms of tachycardia at a very high rate (230 per minute). These were electrocardiographically of supraventricular origin, and on their subsidence the slower sinus rhythm was disturbed by the customary bursts of ventricular extrasystoles. In this case also the patient's clinical condition remained satisfactory, and deepening anæsthesia abolished the irregularities.

No comparable disturbances were noted under any of the other anæsthetics. With ether and gas and oxygen dislocation of the cardiac pace-maker, with variations in the P waves and shortening of the P–R interval, were found, as reported by other authors, but changes analogous to those under chloroform were absent. Two cases under avertin, however, showed more marked disturbances; in both, frequent ventricular extrasystoles occurred, with lengthening of P–R in one case, and variation in the Q R S complexes in the other.

DISCUSSION.

Frommel[14] has noted coupled rhythm due to ventricular extrasystoles in the guinea-pig during induction with ether, and Wachsmuth and Eismayer[15] describe two cases in man where, under ethyl chloride and ether, multiple extrasystoles appeared, in one case during induction and in the other during recovery from the anæsthetic. Chloroform therefore is not alone in producing such extrasystoles. But though not unique, chloroform appears to be much the most potent anæsthetic in causing these cardiac disturbances. Comparison of the results obtained from man with Levy's results from the cat shows the close correspondence between them. The nature of the disturbances, their relation to induction and struggling, their transient nature and disappearance with deepening narcosis, all are similar.

The absence of clinical signs of failing circulation during the cardiac irregularities is at first sight surprising, but can readily be explained. Levy[16] has shown that in animals the blood pressure is well maintained during the period of complex ventricular tachycardia, and falls only with the onset of ventricular fibrillation. Collapse of the patient therefore is to be expected clinically only when the latter most grave condition has developed. Further, our tracings show that each extrasystole tends to be only slightly premature, forestalling the rhythmic sinus beat by 1/25th second or thereabouts; the pulse therefore is not noticeably irregular, and the full diastolic filling permitted to the heart allows the extrasystolic beat to discharge a volume of blood equal to a normal systole. This regularity and the well-sustained blood pressure may mislead the observer entirely as to the true cardiac condition of the patient, for there may be present the "multiple ventricular tachycardia" that is so regularly a precursor of fibrillation in animals.

Levy,[3] in discussing the relation of the ventricular tachycardia to fibrillation, states that:

> "Pending further light on this point it is possible to make the important statement that in every single instance of ventricular fibrillation induced by any of the methods I have employed, it has been preceded by a stage of complex ventricular irregularities, and that unquestionably the one condition leads on to the other, whatever their relationship may be. This observation is limited for the moment to conditions in which the heart is affected by chloroform,"

but he is careful to emphasise that not all cases of multiple ventricular tachycardia end in fibrillation. The tachycardia in cats may persist a considerable time and may then revert to normal rhythm, or "on occasion and on occasion only" may terminate in ventricular fibrillation.

The present records demonstrate the occurrence of this "pre-fibrillation phase" in man; it is a matter of good fortune that the graver disturbances did not occur in any case of the series. Since multiple ventricular tachycardia occurs in approximately 50 per cent. of cases anæsthetised with chloroform, it is easy to understand why the fatality-rate under this anæsthetic is so high. It must be emphasised that this stage of complex ventricular irregularity is not in itself serious or dangerous to the patient; its importance lies in the ease with which it may lead to fatal ventricular fibrillation. It is apparent that, other things being equal, induction with such an anæsthetic as gas and oxygen, which in our experience does not produce this condition, must be safer than induction with chloroform, which commonly does.

CONCLUSIONS.

Disturbances of cardiac action which generally elude clinical observation can be detected electrocardiographically during chloroform anæsthesia. They occur in about 50 per cent. of cases, and are of the nature of multiple ventricular extrasystoles. These on occasion may be very numerous, and the condition then resembles the "multiple ventricular tachycardia" so characteristically found in the cat, and well known as a precursor of fatal ventricular fibrillation. The danger of chloroform for induction probably lies in its tendency to produce these disturbances.

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ADDITIONAL FACTORS IN THE TREATMENT OF LATE RICKETS AND OSTEOMALACIA.*

BY DAGMAR CURJEL WILSON, M.D. GLASG., D.P.H.,
WOMEN'S MEDICAL SERVICE, INDIA (RETD.).

Introduction.—The incidence of late rickets and osteomalacia in northern India has been described, and it has been shown that in urban areas many patients live under social conditions which do not admit of adequate diet or sunlight, while in rural areas field-workers suffering from late rickets and osteomalacia, though obtaining sufficient sunlight, are not in an economic position to obtain an adequate diet.[1] All such cases need vitamin D as calcifying substance, and in its absence utilisation of calcium and phosphorus is impaired; in view of the very small amount of vitamin D often available it is necessary to ensure adequate intake of these minerals.

ADMINISTRATION OF CALCIUM PHOSPHATE.

Examination of the blood chemistry of cases of osteomalacia and late rickets in India has shown a low serum inorganic phosphorus which may be associated with a low serum calcium and tetany.[2]

The conclusion to be drawn from the data summarised in Table I. is that in field-workers living on a diet relatively deficient in vitamins A, D, and salts, the addition of calcium phosphate in doses of 1 drachm daily over a period of six weeks will cure or much improve the pain and deformity of late rickets and osteomalacia. (It has not yet been determined whether calcium or phosphorus is the preponderating missing factor in such cases.) But this treatment is unsuitable for crippled cases, whose condition does not permit of muscular and circulatory activity, or for those patients who are deficient both in diet and sunlight. (The persistence of tetany in some cases also shows that calcium is not made available for use in the body under these conditions.) In such cases the addition of vitamin D is also necessary for cure.

ANTIRACHITIC VALUE OF SUN-IRRADIATED YEAST.

The usefulness of the administration of dried baker's yeast (*Saccharomyces cerevisiæ*), after irradiation by ultra-violet rays in the treatment of various forms of rickets has been recorded by various observers in Europe and America.[3] In order to overcome the cost of imported yeast, and the difficulty attendant on its ultra-violet irradiation in India, the present communication describes the results of treatment with a dried yeast powder prepared in India from the various varieties of yeast left over in distillery vats after fermentation,† and irradiated for eight hours in direct sunlight.

TABLE II.

Results of Treatment of Patients Deficient in Diet and Sunlight (whose symptoms the previous use of a calcium phosphate salt had failed to improve), with 4 drachms daily of sun-irradiated powdered yeast from fermentation vats.

Degree of severity of clinical condition.*	+++	++	+	Nil.	Total cases.
Before treatment	7	6	1	—	14
After four weeks' treatment	—	4	8	2	14

* Classification as in previous records (2).

The patients (see Table II.) put on weight and their general nutrition was improved at the end of four weeks, but five additional cases who failed to take an adequate daily quantity of yeast did not show any alteration at the end of the experimental period.

The conclusion reached was that waste distillery yeast after sun-irradiation has value as a source of vitamin D in the treatment of late rickets and osteomalacia. It is suggested that such yeast may

* A survey of recent work under the Indian Research Fund Association.

† Process of manufacture.—Yeast left over in the vats after the fermentation of molasses has been completed is washed, passed through a press, and dried in the sun. It is then crushed in a disintegrator, using a very fine screen, and again rescreened in order that the product may be in the form of a fine powder.

TABLE I.

Results of Treatment with Neutral Precipitated Tri-calcium Phosphate in Daily Doses of grs. 45 to 60.*

Degree of severity of clinical condition †	*Group 1.*—DEFICIENT DIET.												*Group 2.*—DEFICIENT DIET + DEFICIENT SUNLIGHT.											
	(*a*) Patient active.						(*b*) Patient crippled.						(*a*) Patient active.						(*b*) Patient crippled.					
	+++	++	+	Nil.	Tetany present.	Total cases.	+++	++	+	Nil.	Tetany present.	Total cases.	+++	++	+	Nil.	Tetany present.	Total cases.	+++	++	+	Nil.	Tetany present.	Total cases.‡
Before treatment	3	10	1	–	2	14	2	1	–	–	2	3	7	6	3	–	2	16	2	1	–	–	1	3
After six weeks' treatment ..	—	—	5	9§	–	14	2	–	1	–	1	3	6	3	6	1	–	16	2	1	–	–	1	3

* Supplied by the British Drug Houses, Ltd. † Classification as in previous records (2).
‡ Plus five cases who ceased treatment on getting worse after three weeks.
§ Include three cases in latter months of pregnancy, when the condition usually becomes worse.

also be useful in nutritional disorders due to deficiency of vitamin B.

I am indebted to workers at the Lister Institute for advice regarding a suitable calcium phosphate preparation, and to the Medical Research Council for provision of sufficient amount of the salt for experimental purposes, and also to Miss E. M. Hume and Dr. K. H. Coward for various suggestions regarding the irradiation of yeast.

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Clinical and Laboratory Notes

EFFECTIVE COUNTERACTION OF AVERTIN NARCOSIS.

BY WALTER P. KENNEDY, PH.D., L.R.C.P. EDIN.,
BEIT MEMORIAL RESEARCH FELLOW.

ONE of the main criticisms of the use of avertin as a basal anæsthetic is that owing to its rectal administration in one dose, empirically determined from the body-weight of the patient, it is not possible to control the further course of its action. The rapid absorption of the substance renders lavage of the rectum of no avail should it be desired to interrupt the anæsthesia. Naturally the first investigators directed their attention to the questions of antidotes and detoxication, and early experiments indicated that the administration of glucose or glycuronic acid might possibly prove effective, but this hope was not realised. Then acceleration of detoxication by means of thyroxin was attempted, and although preparatory administration of the hormone lessened the duration of anæsthetic sleep, the amount of the diminution varied considerably. In addition, the thyroxin had to be administered for several days prior to the operation as its effect is only slowly established, and this was sometimes attended with undesirable symptoms. The use of thyroxin in emergency operations, or in a sudden misadventure, complicating avertin anæsthesia, was impossible; and this avenue of detoxication was thus found to be impracticable.

Last year Killian [1] published the results of animal and clinical experiments on the possibility of interrupting avertin narcosis by means of coramine (pyridine-beta-carbonic acid diethylamide), a powerful analeptic, which had already been shown by Uhlmann [2] to have a stimulating effect on heart and circulation, and an even greater effect on respiration, and the central nervous system in the sense of breaking through induced narcosis. Quantitative animal investigations showed that in respiratory failure under large doses of avertin, coramine was superior to 10 per cent. CO_2, and that if small doses of coramine were administered, subsequent exhibition of CO_2 was effective in stimulating respiration though it had previously failed. In man either one or two injections of 2–3 c.cm. coramine intravenously interrupted light anæsthesia immediately, and restored memory right back to the time of administration. The injection must be administered slowly, otherwise transitory hiccough or a tendency to vomit may appear. Intramuscular administration was also effective but slower in its action, the full effect not being attained for 15 or 20 minutes. In all the cases of deep anæsthesia tested, two intramuscular injections of 3 c.cm. coramine solution 50 per cent. (that is double strength) resulted in the rapid awakening of the patient. The toxicity of coramine is very low, and doses very much in excess of these would be required before any ill-effects were produced. Mörl [3] has since confirmed Killian's results and described a case of serious respiratory failure under avertin in which CO_2 was of no avail but where 3 c.cm. coramine intravenously restored the patient immediately. This case was complicated by advanced disease of the lung.

An extensive experience of avertin basal anæsthesia has been gained in this clinic, and the results of 1000 cases have been published (Young [4]). Since this paper appeared a further 350 cases have been added to the series, and in these equal success has been attained. There have been no fatalities which could be ascribed to the anæsthetic. As previously stated, in a number of instances the great fall of blood pressure and coincident considerable rise in the pulse-rate occasioned some misgiving at first, but detailed investigation showed that this had no serious significance, and that the circulatory disturbance could be readily controlled by hypodermic administration of ephedrine. It was remarked that even in these patients who showed the most marked drop in blood pressure the colour remained good. In a small proportion of cases the depression of respiration was more obvious than that of the circulation; breathing grew slower and more shallow, the face becoming cyanosed although an airway was used. The first inhalation of ether often produced a marked and immediate improvement, and 5 per cent. CO_2 in oxygen rapidly relieved those patients who were not restored by ether (Kennedy [5]).

The appearance of Killian's paper suggested an even more useful antidote; he emphasised the superiority of coramine over CO_2, especially when the degree of respiratory failure was advanced. We therefore adopted the procedure outlined by him in a number of cases, using smaller doses, since complete interruption of the anæsthetic was not desired, and found it to be very efficacious.

The usual dose given was 2-3 c.cm. intramuscularly. This was followed by rapid improvement in colour and deepening and acceleration of the depressed respirations. The slack jaw muscles stiffened, and the jaw no longer had to be supported. At the same time the blood pressure rose, and the pulse became slower and stronger. In no case did the dose lessen the anæsthesia to a degree sufficient to interfere with the operation in progress or about to be started. The patients appeared to wake rather earlier than the average, but exact data on this point are not available.

In two cases only was the intravenous route considered necessary. These were as follows.

C. 4/12/31. Just after her return to bed after dilatation and cauterisation of the cervix the patient's respirations suddenly became extremely shallow, and her pulse almost disappeared; her colour was blue-grey. Within one minute 1 c.cm. of coramine was injected intravenously and 2 c.cm. intramuscularly. There was an immediate improvement, and within 20 minutes the respirations and pulse were normal.

B. 22/4/32. Prior to operation, and to the administration of ether, this patient suddenly became cyanosed and respirations failed almost completely. The pulse was thin and rapid. 2 c.cm. of coramine were injected intravenously, and before the second ampoule was completely given a healthy colour returned. 1 c.cm. was then injected intramuscularly to sustain the action. The operation was conducted without further difficulty, but when it was completed approximately 45 minutes after, the respirations

were again unsatisfactory, but rapidly improved on the patient's return to bed.

Although the results aimed at in this series were not so pronounced as those aimed at by Killian, in that no attempt was made to restore consciousness rapidly in any of the patients, they confirm his conclusion that coramine is an effective agent in counteracting and interrupting the cardio-respiratory depression of avertin anæsthesia, which very occasionally reaches a point where active measures are necessary to overcome it.

This work was done in Dr. James Young's Gynæcological Clinic, Royal Infirmary of Edinburgh, and in the Physiology Department, Edinburgh University.

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A CASE OF MITRAL STENOSIS

FATAL AT TWO YEARS OF AGE.

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THIS case is reported because the valvular disease was apparently of the acquired type and its progress was observed.

A female child, aged 24 months, was admitted to the Royal Chest Hospital with the following history. The child had been a healthy infant, weighing 8¼ lb. at birth. There were no other children in the family; the parents were healthy, though the father had had rheumatic fever. Normal healthy development continued until, at the age of 10 months, the child had an attack of "influenza" complicated by otitis media. After this illness her health was impaired and she ceased to put on weight. In June, 1931, when aged 20 months, she developed rapid breathing and cough. She was taken to Great Ormond-street Hospital in July, and subsequently admitted under Dr. R. S. Frew. I am indebted to that institution for the following notes.

On admission there was some dyspnœa, the face was pale, and examination showed impaired resonance and diminished air entry at the right base. There was some precordial bulging and a loud systolic murmur at the apex, which was within the nipple line. A radiograph showed some consolidation in the right lower lobe. The signs of unresolved pneumonia gradually cleared up and the child was discharged on August 28th. Subsequently she was brought as an out-patient, but during the next month her weight remained stationary at 20 lb.

In October the patient again became very short of breath, with swelling of the legs, and was brought to the Chest Hospital. Examination showed evident heart failure. The cheeks were flushed and the neck veins engorged; the legs were œdematous and the liver enlarged. Respiration was rapid, but on auscultation of the chest the air entry appeared free. There was some precordial bulging, and the heart-beat was forcible, rapid (120) but regular. The apex was in the nipple line and here a diastolic murmur with thrill was present, followed by a short systolic murmur. No systolic murmur was heard at the base; the pulmonary second sound was accentuated. The child was admitted forthwith (Oct. 24th). Examination of the blood showed a leucocytosis of 16,600; the Wassermann reaction was negative.

Five days after a temporary improvement, the temperature began to rise, and signs of pulmonary involvement appeared. A radiogram showed considerable consolidation in the central parts of the right lung with some pleural effusion. The child rapidly lost strength and died on Nov. 5th.

A post-mortem examination was made by Dr. Norah Schuster, pathologist to the hospital, who has contributed the following notes.

On opening the pericardium some patchy fibrosis of the visceral layer was seen. The heart weighed 90 g. The left ventricle was slightly hypertrophied; the right greatly hypertrophied. There were patches of fibrosis on the internal surfaces of both ventricles and the left auricle. The heart valves appeared healthy with the exception of the mitral, which was reduced to a slit aperture with absolutely rigid walls. The papillary muscles were fibrous and contracted; the edges of the valve were rolled over and extremely hard but without calcification. The foramen ovale and ductus arteriosus were closed.

Microscopical examination showed extensive fibrosis under the endocardium of all the chambers, most marked in the left auricle. Fibrosis in the muscle was greatest in the hypertrophied right ventricle, where there was extensive scarring and replacement of muscle by fibrous tissue. There was no cellular infiltration of the interstitial tissue and no Aschoff bodies could be found.

There were 20 oz. of clear fluid in the right pleura, 1 oz. in the left. The lung surfaces were smooth. On section there was some general purulent bronchitis, most evident in an area of consolidation near the root of the right lung. Microscopically this area showed purulent bronchitis and an alveolar exudate containing abundant endothelial cells. There was some thickening of the alveolar walls by cellular infiltration, but in the opinion of Dr. A. E. Naish (who kindly examined the section) it did not conform to the picture of a rheumatic pneumonia.

The liver was grossly enlarged and, with the spleen and kidneys, showed the usual appearances of passive congestion.

In this case the healthy condition of the infant for the first eight months of its life and the natural development of the heart in the closure of the foramen ovale seem to negative a congenital malformation. On the other hand, after an acute illness involving the throat, the child ceased to put on weight, and later showed progressive cardiac weakness. An apical systolic murmur was present in the summer and by the late autumn a definite thrill and presystolic murmur had developed. Death was due to progressive mitral stenosis complicated by recurrent inflammation in the lung. These features appear sufficient to justify the conclusion that the mitral disease was of the usual acquired type so common at a later period of life.

NEW INVENTIONS

UTERINE CATHETER.

INTRA-UTERINE medication by glycerin is of service in sapræmia and salpingitis. Several treatments are required, and the instrument here illustrated—a modification of an Eustachian catheter—

assists ease of administration and efficacy of treatment in that the patient is treated in bed in the latero-prone position. The catheter is long and flexible, and after being moulded into a suitable curve is inserted by sight into the uterine cavity, the perineum being retracted by a Sims speculum. It fits an ordinary Record syringe.

Messrs. Allen and Hanburys, London, are the makers.

W. MCKIM H. MCCULLAGH,
D.S.O., *M.C.*, F.R.C.S.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

AT a meeting of this section held on May 24th the chair was taken by Dr. E. P. POULTON, the President, and a discussion on some problems concerning the

Prevention and Treatment of Acute Rheumatic Infection

was opened by Dr. W. R. F. COLLIS.

The fundamental treatment of acute rheumatism depended, he said, on a better understanding of its epidemiology. As a result of study in the special homes for rheumatics the importance had been realised of the "silent" or "lag" interval of seven to 20 days between the acute throat and the rheumatic relapse; also the infective agent in the throat condition had been proved to be the hæmolytic streptococcus. The child had an acute tonsillitis, completely recovered and lost the streptococci from the throat, and then had a rheumatic manifestation a week or two later. Epidemics associated with other organisms were never followed by rheumatic relapses. If the hæmolytic streptococcus caused acute tonsillitis in non-rheumatic communities, the same syndrome could be observed: tonsillitis, lag period, acute rheumatic fever. There was no difference in ætiology between primary and secondary attacks. Rheumatic patients were very sensitive to hæmolytic streptococcal extract. The first tonsillitic attack sensitised the patient, so that the rheumatic attack was apparently an allergic phenomenon.

These considerations, leading to the conclusion that hæmolytic streptococcal throat infections were an integral part of rheumatic disease, threw open a new field of therapy. In rheumatic homes relapses could be prevented by hygienic measures; ward-swabbing in epidemics, and strict isolation of all cases and of all attendants whose throats harboured the organism; the administration of aspirin during the silent period, and the desensitisation of patients. Overcrowding seemed to be the chief cause of rheumatic fever in communities.

Dr. W. H. BRADLEY said that his own observations on a community of healthy boys showed the disease developing in a non-rheumatic community in exactly the same way as Dr. Collis's had shown relapses to appear in hospitals. The type of streptococcus causing the acute sore-throat was known in some cases to have been absent from the throat a few days before the attack. The condition was a simple hæmolytic streptococcal nasopharyngitis communicated by droplet spread. The school had been free from acute rheumatism for 40 years, though many waves of sore-throat due to other organisms had passed through it. Boys who had previously shown signs of rheumatism relapsed when they came into contact with these epidemics. Acute rheumatism in the general population seemed to be a family disease. The precursor fever would only produce rheumatism in predisposed subjects, and this personal factor might prove amenable to desensitisation. The attack on acute rheumatism should, however, be directed against the original sensitising fever. Continuous doses of aspirin from the onset of nasopharyngitis had value in preventing the subsequent rheumatism, but tonsillectomy was useless. One insulating material was of value above all others in preventing droplet infection—fresh air. Also useful were nasal breathing, clean handkerchiefs, a good diet with plenty of vitamins, warm feet, and a cool head. The pre-rheumatic must not catch cold.

Dr. CAREY COOMBS said that in the city of Bristol the rheumatism rate was very much higher than in the country round. In Bath, very similarly situated only 12 miles away, there was a striking contrast in incidence, possibly associated with the smoke-film over Bristol. A fall in body-weight on return home from hospital had been noticed in the rheumatic patients, even if the home food was adequate. The fall strongly suggested a relapse into a pre-rheumatic condition.

The PRESIDENT commented on the general agreement that acute rheumatism was associated with the hæmolytic streptococcus. Mitral stenosis and carditis could not be explained as allergic phenomena; there must be a stage of invasion as in scarlet fever. He still had a sneaking belief in the value of tonsillectomy; it was definitely useful in nephritis, on which acute rheumatism might supervene. He was rather suspicious of salicylates as being merely symptomatic treatment. He wondered if the advantage of Bath was not its warmth rather than its absence of smoke. The very poor did not get rheumatism because they warmed each other by crowding together.

Dr. F. J. POYNTON said that if there was such a thing as a specific disease, rheumatism in children was an example. It was one of the most specific diseases known. An organism might only develop specificity when it entered certain tissues. He feared that one of the great causes of rheumatism would prove to be sudden change of temperature. There must be a peculiar constitution in acute rheumatism, and he suggested that the individual was born with it, rather than developing a "pre-rheumatic state."

Dr. KINGSTON BARTON said that the deaths from rheumatic fever were much more numerous in the north; warmth had some influence.

Dr. LEONARD FINDLAY had the impression that a different strain of organism caused the arthritic and the choreic types of rheumatism. Tonsillectomy did have some effect, and salicylates were certainly specific in arthritis. He had grave doubts of the causative rôle of the hæmolytic streptococcus.

Dr. E. C. WARNER said that all the rheumatic relapses he had seen had been associated with hæmolytic streptococci in the throat. He wondered whether two different types of organism caused rheumatism and nephritis. The two conditions ran a comparable course, but were seldom associated. Vitamin A had proved not to affect the incidence of rheumatic relapses at all.

Dr. C. W. BRASHER asked for rheumatism figures from other smoky towns.

Dr. B. E. SCHLESINGER said that the environment was still a baffling factor; children often relapsed as soon as they returned from a convalescent home, but they might be well at home and relapse in the country. In some cold climates rheumatism was unknown. Aspirin had been used to try to stop the results of the precedent tonsillar infection, and seemed to have reduced the number of relapses. He doubted the value of tonsillectomy; relapses might be just as virulent after it. The responsible streptococcus need not necessarily hæmolyse blood agar; he had seen a *viridans* infection produce typical attacks. The causal factor might be some part of a streptococcus rather than a type of streptococcus.

Dr. D. H. GEFFEN said that the incidence of rheumatism was much lower on the northern heights

than in other parts of London which were warmer, but which lay under the smoke pall.

Dr. N. GRAY HILL commented on the very small extent to which rheumatism spread in wards or to the nursing staff. There did seem to be some innate predisposition.

The openers briefly replied, Dr. COLLIS remarking that serum was useless and definitely contra-indicated.

SUBSECTION OF PROCTOLOGY AND SECTION OF UROLOGY.

A JOINT meeting of these sections on May 11th, with Mr. W. S. PERRIN, President of the subsection, in the chair, was devoted to the

Urinary Complications of Diseases of the Large Intestine.

Mr. HUGH LETT said that the kidney might show pyelitis or pyelonephritis in many disorders of the large intestine—such as chronic intestinal stasis, colitis, dysentery, diarrhœa, and inflamed hæmorrhoids—while in the pelvis an extension of carcinoma of the rectum might compress one or both ureters. Cystitis, with or without pyelitis, might also be met with in inflammatory conditions of the large intestine. And other conditions, such as cancer or tuberculosis might establish communication between the cæcum, colon, rectum, and bladder. Fissure-in-ano sometimes caused definite pain in the bladder and urethra, and infection of hæmorrhoids had been followed by uncomfortable urinary sensations.

At the London Hospital 172 cases of diverticulitis were admitted in the period 1922–31, and 10 per cent. of these had secondary urinary symptoms. This showed that the incidence of vesical complications was comparatively small; they included disturbance of micturition, *B. coli* cystitis, perivesical abscess, and vesical fistula. Of the six cases of pericystitis, all had been admitted with acute diverticulitis. In none of the six could an abscess be detected. Three of them recovered after medical treatment. The urine was normal in five cases and in the sixth contained red cells and a few leucocytes. Cystoscopic examination was negative. The symptoms in these cases were due to involvement of the bladder wall, the direct result of the extension of the inflammation from the colon. Perivesical abscess if untreated would probably burst into the bladder. An abscess large enough to be detectable above the pubes should be treated by a preliminary incision, followed by drainage.

Vesico-colic fistula was very rare. In the ten years 1922–31, 96,192 patients were admitted into the surgical wards of the London Hospital, and the cases of vesico-colic fistula amounted only to 1 in 10,000 ordinary surgical cases. When it occurred it was usually a symptom of diverticulitis. In malignant disease of the colon fistula was a late development, and the patient was usually so ill that he was admitted to an infirmary. The cystoscopic findings varied. In recent cases of fistula there was an acute general cystitis, with a circumscribed, red, œdematous area. If the fistula had been present some time and the opening was only small, the cystitis gradually became less acute, the œdema disappeared, and was replaced by a small ulcerated area, the rest of the bladder appearing to be normal. Once a vesico-colic fistula was formed, nothing short of colostomy could cure it. Two or three weeks after colostomy, the bladder symptoms rapidly disappeared, and, except for a haze due to bacilluria, the urine became clear. In some cases transverse colostomy was the operation of choice, as in the presence of multiple diverticuli in the descending colon. Colostomy, however, did not always result in a permanent closure of a fistula. When the colostomy was done it was essential to close the distal end of the bowel properly, otherwise leakage might set up reinfection.

Mr. CYRIL NITCH said that urinary complications associated with disease of the large intestine were due to direct involvement of some part of the urinary tract either by spread of inflammation, by adhesion, by invasion of growth, or by a fistula. The kidney was but rarely implicated, owing to its protective barrier of fat and fascia. Bladder symptoms occurred more frequently with diverticulitis of the pelvic colon than with rectal or colic growths. The lymphatics of the cæcum and ascending colon communicate with the lymphatics of the right kidney. A combination of bladder and bowel symptoms was almost pathognomonic of an inflammatory cause. In a series of cases of diverticulitis 50 per cent. had urinary symptoms, whereas in a larger series of carcinoma of rectum and colon only 2·4 per cent. had fistula. The treatment of vesico-colic fistula should be cautious, and in most cases conservative for a considerable time. A preliminary cystoscopy should always be carried out to ascertain the position and size of the opening and its possible cause. If this were found to be intraperitoneal the abdomen was opened and examined carefully with as little disturbance as possible of the pelvic contents. Colostomy should then be carried out mostly in the transverse colon, though in some cases the inguinal operation was preferable. If the fistula was due to a growth considered irremovable, the excision should be carried out as soon as the artificial anus was properly established. If it was due to diverticulitis, however, a year or 18 months should be allowed to elapse before resection was attempted. If normal micturition was not restored after removing the catheter, there were four alternatives: (1) regular catheterisation by the patient or an attendant; (2) removal of obstructing prostatic tissue by perurethral endothermy; (3) permanent drainage by a self-retaining catheter inserted through the bulbous portion of the urethra; (4) (as a last resort) suprapubic drainage.

RETENTION OF URINE.

Mr. J. P. LOCKHART-MUMMERY said the subject covered a wide range of conditions, from retention of urine following the ligation of a pile to the division of a ureter during excision of cancer of the rectum. Retention of urine was a common sequel to this latter operation, which must inevitably cause some injury to the sympathetic nerve-supply of the bladder. He was accustomed to use a retained catheter for some days after the operation, employing Dr. Cuthbert Dukes's apparatus, which enabled the whole catheter area to be bathed in a weak antiseptic. But there was a liability to partial retention after the catheter had been removed, and it was the residual urine which caused infection. The patient should empty the bladder as completely as possible, and it should be regularly washed out. Mr. Lockhart-Mummery had discontinued the use of antiseptics by the mouth. Incontinence following excision of the rectum was very rare; he had had only two cases of nocturnal incontinence after it, both in males, one clearing up in six weeks, the other in two months. Injuries to the urethra after operations on the rectum were also uncommon in his experience; a catheter tied into the bladder and a careful repair of any such injuries with stitches resulted in perfect union. But injuries to the bladder were very likely to occur, either intentionally or accidentally, during excision

of the rectum for cancer when the latter was adherent or involved the vesiculæ seminales in front. Injuries to the ureter were more serious, and they should not occur during a perineal excision; there was, however, a definite risk of injuring the left ureter when carrying out abdomino-perineal excision. If both kidneys were healthy and not infected, he regarded ligature of the ureter as a sound procedure.

In most cases of vesico-colic fistula the best treatment was immediate colostomy.

THE CATHETER HABIT.

Mr. LIONEL NORBURY dealt only with post-operative urinary complications, and vesico-colic fistula. Injury to pelvic nerves, he said, might be a very serious complication in operations for removal of the rectum, but careful handling of the tissues minimised the risk. The difficulty which many patients had in micturition after rectal operations was probably of reflex character; it was quite common after the removal of piles. There was also a difficulty due to catheterisation. The use of a catheter predisposed to infection of the urinary tract, and was the main path by which micro-organisms reached the urethra and the higher portions of the urinary tract. This risk was greater in women than in men. The "catheter habit"—i.e., failure to empty the bladder without the aid of a catheter—was particularly common in women, some of whom had to be re-educated in the matter. A method of preventive treatment, which had greatly reduced the incidence of urinary infection in men, was the use of an indwelling catheter the end of which was sealed by an antiseptic solution. In women infection was largely the result of catheterisation. At the Royal Free Hospital he had had only one case of vesico-colic fistula; as the patient refused operation he did not know whether it was due to diverticulitis or carcinoma.

Dr. CUTHBERT DUKES said that after a catheter was tied in, three types of infection of the urine might occur. Infection might have taken place either from trauma at the operation, or during the catheterisation, or it might be hæmatogenous in origin. Urinary infections were more common in advanced than in early cases of cancer.

Mr. E. T. C. MILLIGAN spoke of the treatment of post-operative urinary fistula. Some urinary fistulæ healed without their cause having been discovered. If the prostate was enlarged it should be removed as soon as the patient was fit for that operation or the fistula was unlikely to heal.

Mr. G. E. NELIGAN called attention to the long time during which some people with vesico-intestinal fistula could live in comparative comfort; in one case the period of comfort was 15 years.

Mr. JOHN EVERIDGE spoke of the difficulty of dealing with prostatic retention after some form of colostomy. He commented on the possible value of perurethral prostatic destruction or a method of channelling the prostate, to tide the patient over his period of acute retention, and so enable him to wait until the rectal condition could be dealt with. Cases of prostatic retention associated with carcinoma of the intestine were not very common, but he had recently had such a case, in which a surgeon had done cæcostomy because of acute intestinal obstruction due to growth lower down. Soon after cystoscopy there was acute retention, and the man was found to have an enlarged prostate, and a definite prostatic bar, the existence of which a number of urologists denied. It seemed to be a good case for cauterisation of the prostate, and this succeeded, but the patient died a little later from uræmia.

TUBERCULOSIS ASSOCIATION.

AT a meeting of this association, held on May 20th, at the London School of Hygiene, Dr. O. M. MISTAL (Montana, Switzerland) read a paper on different methods of

Severing Adhesions in Artificial Pneumothorax.

Statistics collected in America and elsewhere showed, he said, the importance of obtaining a complete pneumothorax, but that unfortunately this was not always possible, adhesions interfering with some 75 per cent. of the cases. Various methods of dealing with these adhesions had been tried, among the more popular of which were those of Sauerbruch and Archibald, who severed the adhesions after a double ligature; Paternoster, of Buenos Aires, who resected a part of the eighth rib and freed the adhesions by hand; and that of Jacobaeus under the control of thoracoscopy. The clinical indication for the section of adhesions was when a patient with artificial pneumothorax continued after three to six months to expectorate bacilli and elastic fibres, and to show toxic symptoms. Sometimes the division of only a few small adhesions was sufficient to bring about the disappearance of bacilli. In children, however, the severing of adhesions was often unnecessary, since they stretched by themselves, and the scars were fresh and easy to compress.

The presence of exudates was not necessarily a contra-indication to the operation, unless there was a high degree of fever, or a mixed infection with much albumin. In cases of empyema the operation was possible but dangerous, since it often resulted in fistulas of the chest wall. Tuberculosis of the larynx was not a contra-indication, but nephritis and intestinal tuberculosis were absolute contra-indications. A preliminary radiological examination was essential, but even with this control more adhesions were usually found with the thoracoscope than had previously been suspected, and these might be situated at a different angle than that apparently shown by the X ray. Careful screening of the patient in different positions would obviate many of these errors, especially if the stereoscope was used. Thoracoscopy was the final factor in deciding as to the possibility or advisability of separating the adhesions. Investigation was often especially difficult in pneumothorax cases with a residue of pleurisy, since it was not easy to differentiate between connective and pulmonary tissue. Sounding with a luminous Maurer hook might, however, be of great service.

Maurer grouped adhesions into four classes, Group 1 being composed of adhesions of uniform shape, threads, or cords, which were easy to section. Group 2 consisted of adhesions with an enlarged thoracic insertion, which could also be divided without danger. Group 3, with enlarged and conical pulmonary insertion, were dangerous to cauterise, owing to the risk of opening up cavities. The fourth group was composed of adhesions of hour-glass shape, which had a thoracic insertion of connective tissue and a pulmonary insertion of parenchyma. These adhesions should, of course, be separated in the connective tissue portion.

There were, said Dr. Mistal, various types of thoracoscopes with cautery and lamp carriers. That of Jacobaeus gave an optical deflection of 90°, the modification of this instrument by Unverricht being more luminous and having a larger optical field. With Chandler's thoracoscope, which gave an optical deflection of 30°, orientation was easier. Kremer's thoracoscope gave direct observation of adhesions, without deviation of the optical ray and without transposition, but it could not be used in a small

pneumothorax. Adhesions could be cauterised by one of two methods—galvanic or diathermic, the former being the older and the more simple. Absolute asepsis was essential, just as much as in the case of a major operation. The section of adhesions being often very painful, it was necessary to anæsthetise them, this being done by means of long needles. Galvanic cauteries were bent or straight, the former being preferred by Unverricht. When dividing adhesions by the galvano-cautery it was important to cauterise with a red glow which, though acting slowly and emitting smoke, had the advantage of properly coagulating the tissues and preventing hæmorrhage. A white glow irradiated too much heat; it cut rapidly, but exposed the patient to the risk of bleeding. The chief advantages of diathermy were the absence of radiant heat and smoke; the easy and practically painless division of adhesions; and the avoidance of hæmorrhage. The voltage was regulated according to the type of tissue to be sectioned, a weak current being generally used, and a stronger current for old fibrous adhesions. The two methods of cauterisation had each their respective advantages, and many authorities combined them, using galvano-cauterisation after a preliminary diathermic coagulation. Maurer had designed a combined instrument for this purpose.

Complications due to the section of adhesions, though increasingly scarce owing to improvement in technique, included exudate, 30 per cent. of which appeared to be due to hæmorrhage, and could be avoided by working far from the vessels and by coagulating the more vascular strings; emphysema, which was chiefly met with in patients who were coughing a good deal; empyema, which might occur as late as six months after the operation; and symphysis, which could be avoided by timely refills. Many of the failures after cutting adhesions could be avoided by a proper selection of cases, and by undertaking the operation within three months of initiating a pneumothorax.

Atelectasis, Detelectasis, and Apneumatosis.

Dr. ERNEST FLETCHER read a paper with this title. The term "collapse of the lung" was, he said, being used to include so many different conditions with widely differing ætiology, that two new terms had been introduced—detelectasis and apneumatosis. The term detelectasis implied that a lung which had once been inflated was now collapsed or collapsing—differing thus from an atelectatic lung, a term which should only be used with reference to a congenital or fœtal condition of incomplete expansion of the lungs. Detelectatic collapse was nearly always lobar; there was actual falling in of the lobe so that the visceral and parietal layers of the pleura were no longer in contact. The term apneumatosis was used by the speaker to describe a special condition generally due to bronchial obstruction in which the alveoli were comparatively airless, but the elastic tissue of the lung being intact the visceral and parietal layers of the pleura were in their usual relationship.

Atelectatic areas might be either lobar or lobular in distribution. In the lobar type atelectasis led to a considerable reduction in the volume of blood going through the lobe, so that there was little circulation through unaerated blood channels. The final stage of lobar atelectasis was often confused because of a terminal infection in the lung or elsewhere. The symptomatology was either that of the diminishing area available for pulmonary ventilation or that of the terminal infection. The age of the patient varied, the oldest recorded case being 58; and the actual cause of death might be a hæmoptysis. It was evident that if the parenchyma of a lobe was atelectatic, the bronchi supplying the lobe must dilate when they became infected, and this was probably the reason why these conditions had always been labelled bronchiectasis. In the lobular type of atelectasis small areas in various parts of the lung remained permanently uninflated, in the case either of weakly children or of children subjected to unusual stresses. The atelectatic areas in these cases being scattered and in close proximity to fully patent alveoli would receive an almost normal blood-supply, and in consequence a proportion of blood would be returned unaerated from the lungs; the carbon dioxide tension would rise, and the hæmoglobin would be incompletely saturated. Such children therefore suffered from attacks of dyspnœa and cyanosis; and were prone to infection in their early days, so that broncho-pneumonia was a common incident with them. The final stage of lobular atelectasis was probably the condition known as congenital cystic lung. As a rule the case would come to notice either because the cysts pressed on the rest of the lung or because they became infected or led to bronchiectasis.

Detelectasis might be of sudden or gradual onset, the former type including the condition known as "massive collapse," the mechanism of which was still in doubt. Detelectasis of gradual onset usually involved a complete lobe—in the majority of cases the lower lobe. In a recent series of 100 cases of bronchiectasis of the general non-specific type, 20 had atelectatic lobes, 15 of these patients being under 17 years of age. These cases were difficult to diagnose clinically, since they gave no signs except those of the compensatory emphysema which occurred in the other lobes. The X ray was the usual method of diagnosis, the detelectatic lobe being represented by the basal triangular shadow with its hypotenuse running obliquely downwards and outwards from the mediastinum to the radiological periphery of the lung field. Atelectasis of gradual onset was never seen except in cases of gross lung infection, which might or might not be specific. Elastic fibres were never found in the sputum, as they might be in tuberculosis, but as the infection spread through the lung the fibres were involved and became destroyed in situ. Then as the destruction of elastic tissue proceeded the negative pressure fell and gradually the lobe collapsed. In all cases where general detelectasis occurred there was a compensatory emphysema in the other lobes of the same lung, but never, apparently, in the other lung. This was evidently not a central but a peripheral mechanism. X ray photographs showed that gradual detelectasis involved no displacement of the mediastinum, in contrast to the condition found in acute detelectasis where such displacement was one of the classical diagnostic signs.

Apneumatosis.—In this condition there might be either merely impairment of lobe and diminished air entry over the affected lobe, or the classical signs of consolidation might be present, irrespective of the ætiological factor concerned; but depending on the degree of obstruction and the rate at which it had occurred. On the X ray film there was a loss of translucency confined to the lobe concerned, the loss of translucency being seen as far out as the radiological periphery of the lung. Extensive apneumatosis was occasionally seen in connexion with fibroid tuberculosis where the larger bronchi were concerned. Kyphosis and kypho-scoliosis frequently led to apneumatosis because of the kinking of the bronchi.

EUGENICS SOCIETY.

Voluntary Eugenic Sterilisation.

A CONFERENCE, arranged by the Eugenics Society, was held at the Caxton Hall on May 23rd. At the morning session Sir ALLAN POWELL took the chair, and a discussion on the

MEDICAL AND LEGAL ASPECTS

of the subject was opened by Dr. R. LANGDON-DOWN. The method of sterilisation proposed by the Eugenics Society, he said, did not affect any essential sex gland or tissue. The operation was simple, especially in the male, and the risks negligible. The legal position was ambiguous at the present time; the operation had been performed in this country by certain practitioners but there was no body of critical experience, and we had to look to America for facts about sterilisation. It was recognised that a well-to-do woman could obtain sterilisation in England, if she wished, but that it was almost impossible for the hospital class of patient to obtain this treatment. The chief methods of preventing the birth of children to defective parents were five: celibacy and abstinence; regulation and restriction of marriage; segregation; and contraception, either temporary, by the use of some appliance; or permanent, by sterilisation. To these might be added abortion and infanticide, more drastic measures which need not come under discussion. Celibacy was obviously restricted to a few persons of foresight and strong character, and could not be relied upon as a general measure. The prohibition of marriage for defective persons did not necessarily prevent propagation. Segregation provided at the present time for one-tenth of the mentally defective persons in the country and it was unlikely that it would ever provide for more than one-quarter. Contraceptive measures were unreliable, and called for a higher degree of intelligence in their use than was commonly found in mentally defective persons. Sterilisation offered a permanent method of contraception. It was not necessary that medical opinion should maintain that defect could be eliminated by this measure in a short time; if it could be shown that sterilisation would reduce this great evil to some extent that was sufficient. Medical opinion was almost unanimous that certain cases of mental deficiency might be prevented by sterilisation, and that no other means were available to reduce heritable mental defect. It was, in any case, undesirable that children should be reared by mentally defective parents.

Sir THOMAS HORDER said that sterilisation did not differ from birth control in principle but only in efficiency. Cutting of the human body might be regarded as mutilation, although where an operation was undertaken on behalf of the health of the patient the offence was presumably theoretical, provided reasonable skill and care were shown. Sterilisation was frequently undertaken for women in whom childbearing involved a danger to life. It was conceivable that the husband, in such circumstances, might offer to be sterilised, in order to spare the wife the dangers of the operation. What would be the legal position of the doctor who undertook to sterilise him? Or what would be the legal position of the doctor who sterilised himself? It was not often that a doctor would undertake sterilising operations for reasons other than health, while the legal cover remained so slender. The hospitals, moreover, refused to sterilise patients on eugenic grounds and it was undesirable that there should be a discrepancy between hospital practice and private practice.

PARLIAMENT AND THE LAW.

Wing-Commander A. W. H. JAMES, M.P., said that a small non-party committee had been formed in Parliament with a view to introducing a Bill on sterilisation later in the year. In the recent election, when he had stood for an east-midland industrial constituency, he had published his opinion that one of the most pressing needs was to deal with mental defect by means of sterilisation. His view had met with no criticism, but with much expressed support. He had attempted, since entering Parliament, to find out the views of other members, and had analysed those expressed in detailed discussion, or written to him, by 42 members. From 16 he had received unqualified support; from 16 others, personal agreement without any pledge to support a public measure; from 5, non-committal replies; and from 5 unqualified non-acceptance of his principles. He thought it likely that a Bill introduced now would have a two to one majority. The last Bill on sterilisation had been introduced about 18 months ago under the ten minutes rule, and the introducer had begun by saying that it was "probably a long way in advance of public opinion." The opposer had described it as an attempt at class legislation opposed to labour, and its introduction was defeated. He thought that an advance would be made if constituents would bombard their members with letters on the desirability of sterilising mentally defective persons.

Mr. CECIL BINNEY said that the law as it affected sterilisation was not simple. Civil proceedings could only be taken against the doctor if he was guilty of breach of contract, for example if he performed the operation against the patient's will, or if he was guilty of negligence. If sterilisation was performed for the benefit of the patient's health it was legal, but there was little doubt that sterilisation of mentally defective persons or persons of unsound mind on eugenic grounds was illegal. The 1861 Act which codified criminal law covered crimes of violence. The consent of the patient would probably be regarded as a defence, under this Act, of a doctor who had performed sterilisation on a person of sound mind. But if the view was taken by the judge and jury that the operation constituted "grievous bodily harm," the consent of the patient would *not* constitute a defence. He was not aware, however, of any express prohibition to self-mutilation. If it was decided that sterilisation was contrary to public policy, then the patient and doctor might be found guilty of conspiracy in consenting to and performing the operation. He thought it would be illegal for a man to be sterilised in order to save his wife from the operation; the law would take the view that he might marry again later. Doctors were unwilling to perform the operation while the state of the law was ambiguous, and it was highly desirable that the law should be made more certain.

STERILISATION IN OTHER COUNTRIES.

Mrs. C. B. S. HODSON said that sterilisation of mentally defective persons had been carried out in many American States for about 30 years; she had visited the States in 1928, and had found that, even in the most conservative of them, sterilisation was being carried out on quite a large scale, and was outrunning the legal position. In California defective persons coöperated voluntarily, and were proud of having had the operation performed, regarding it

as something which placed them on the level of the most responsible thinkers in the community. The relatives were also ready to coöperate, and brought children to the institutions voluntarily in order that they might be sterilised. There appeared to be a diminished tendency to promiscuity among those operated on, probably because of careful education in the institutions, and supervision afterwards under a high type of social worker.

Miss H. POCOCK said that Alberta, Canada, was the only province in the British Empire which had an Act authorising sterilisation of mentally defective persons. This Act became law in 1928, and up to December, 1931, 106 cases had been presented for sterilisation and the operation had been approved by the Board in 101. Sterilisation had been performed on 80 of these up to that time; in the follow-up reports of 32 of them, it was interesting to note that 17 patients had "improved physically and mentally, and with satisfactory adjustment," 13 were physically well with no mental change, and 2 were fair physically and mentally. Recommendations for sterilisation were first made by the head of the mental defective training school; a report was then made by a social worker on the family history and home conditions. The patient was next seen by an independent doctor, and if he agreed with the previous reports, the patient, or those responsible for him, asked for the operation in writing and signed the document before witnesses. This request with the three reports was sent to the Board and then to the Minister of Health. If the case was approved, the operation was performed free of charge. In Michigan, U.S.A., a system of compulsory sterilisation was in force, but, in addition, every attempt was made to secure the coöperation of the patient and his parents.

SOCIAL AND MORAL ASPECTS.

At the afternoon session Prof. R. RUGGLES GATES took the chair, and the discussion was opened by Prof. A. M. CARR SAUNDERS. There was no objection, he said, to sterilisation performed in the interests of health, and therefore it was not the operation itself but its purposes to which objections were raised. There was, however, a moral obligation not to bring defective children into the world. Sterilisation was not proposed as an alternative to segregation but as an adjunct to it. Prohibition of marriage was humiliating, and, besides being ineffective, robbed the defective person of the opportunity of enjoying a stabilising environment. While there was no reason to suppose that sterilisation would increase promiscuity or the spread of venereal disease, it was extremely probable that the prohibition of marriage would augment these evils. It was unlikely that sterilisation would rob the world of persons of talent or genius, for these were rarely born to mentally defective parents.

Dr. C. J. BOND said that a movement was going on under the Leicester local health insurance committee to spread information on eugenic marriage. The local body responsible for the welfare of the blind had been reluctant to allow those under their care to marry where there was a danger of transmitting blindness. It had been possible to arrange for the sterilisation of some of these patients, with the result that they had been able to marry. Hospitals were unwilling to give facilities for voluntary sterilisation to their patients, and this operated unfairly as between the rich and the poor. An informed public opinion and a change in the law were needed.

The Rev. J. C. PRINGLE said that the principle of voluntary sterilisation had extended at least through the last three civilisations. For 400 years the marriage service had embraced three distinct reasons for union: to provide an outlet for the sexual impulse; for the procreation of children and their proper nurture; and for "mutual society, help and comfort." In this, it was clear that the sexual impulse was differentiated from the procreation and care of children. The same principles appeared to have obtained in previous civilisations. It might therefore be regarded as socially and morally right to make the best possible adjustment as regards sex, and socially and morally wrong to bring children into the world unless all conditions were favourable to their nurture on the best lines.

Dr. C. P. BLACKER said that the practical proposals of the Eugenics Society embraced sterilisation for mentally defective persons, mental convalescents, and those suffering from hereditary diseases, disabilities, or defects other than insanity or mental defect. The Bill introduced by Major Church had been limited to mentally defective persons only. It had been estimated that only 5 per cent. of mentally defective persons had mentally defective parents, and the reduction in the incidence of mental deficiency attainable by legalising the sterilisation of this group would therefore be small. To decrease the incidence to any marked extent it would be necessary to include the so-called social problem group among those covered by any change in the law. The legal position with regard to the sterilisation of persons not of unsound mind was not well defined, and it might be possible to popularise the operation for the social problem group, disregarding the state of the law.

In the discussion which followed Dr. R. A. CLEGG put in a plea for large families. Many distinguished persons, he said, were the seventh or eighth sons of clergymen. He thought it inadvisable to discourage large families.

Dr. B. DUNLOP thought that the demand should be made for voluntary sterilisation rather than voluntary eugenic sterilisation. If the word "eugenic" was included all those who were not segregated or under observation were excluded.

Dr. J. GREENWOOD WILSON and Councillor Mrs. E. A. WESTON urged the advantage of getting into touch with town councillors up and down the country, in an attempt to establish an informed public opinion on sterilisation of mentally defective persons.—Other speakers included Mrs. NEVILLE ROLFE, Alderman J. W. BLACK, Mrs. LASKI, Lady JONES, and Dr. K. B. ARKMAN.

THE CANCER HOSPITAL, FULHAM-ROAD.—At the annual meeting on May 13th it was reported that last year 1086 patients were admitted, and that the out-patients numbered 1512, who made over 23,000 attendances. The new building has been completed and furnished; the total cost of all the new works has been approximately £140,000. The radiological department is now in full working order. The treatment of patients by radium has been further extended and the Radium Commission has lent a one-gramme bomb. The London Blood Transfusion Service has given invaluable assistance. As usual, the medical committee received many requests to try "cures" for cancer, and whenever their composition is stated they are carefully and sympathetically considered, and, if necessary, investigation is made. Nothing encouraging has resulted, but one communication has opened up a line of research which may lead to the discovery of useful information. Mr. R. H. Jocelyn Swan, the senior surgeon, said that during the last three years nearly 700 cases had been treated with radium, and that some of the results were astonishing, but the statistics, good as they were, would be greatly improved if only cases could be got in their early stages.

ROYAL INSTITUTE OF PUBLIC HEALTH.

ANNUAL CONFERENCE AT BELFAST.

THE annual conference of the Royal Institute of Public Health was held at Belfast, May 10th to 15th, Lord LONDONDERRY presiding. The meetings were well attended throughout by members of the public as well as by professional workers. A proposal made during the conference was that a Ministry of Health should be established in Northern Ireland.

STATE MEDICINE AND MUNICIPAL HYGIENE.

Opening a discussion on *venereal diseases* as a public health problem, Dr. DAVID LEES (Edinburgh) put the case for compulsory notification and treatment of venereal disease. The almoner system had certainly proved very useful at the Edinburgh Royal Infirmary, since five years ago 50 per cent. of the patients failed to complete their treatment, and last year only 17 per cent. defaulted; the almoners also succeeded in getting relatives of patients to attend. But every day in his work he came across evidence for the need of compulsory treatment. Compulsory notification would help women more than men, for in 60 per cent. of the cases of syphilis among women the victim had contracted the disease without transgressing any social law. Dr. EILEEN HICKEY (Belfast) said that in her experience most of the specimens of blood sent for the Wassermann test came from the gynæcological and ear, nose, and throat departments. In most cases of skin disease, excepting such frank diseases as scabies, and in cases of tumour and heart disease the blood should be examined for syphilis. She was opposed to the segregation of women and children suffering with venereal diseases; they should be placed in general wards.

Clean food.—Lieut.-Colonel T. DUNLOP YOUNG (London) described the careful inspection and cleanly handling of animals and meat in the Argentine destined for this country. During the dressing the carcasses are washed with a spray brush with fresh water; here a bowl of dirty water and a cloth are used time after time. Mr. P. F. DOLAN (chief veterinary inspector, Dublin) referred to the importance of antemortem inspection—a carcass setting well is not always an index of soundness.

Mr. A. M'LEAN (city veterinary surgeon, Belfast) believed that the risk of tuberculous infection of milk would be rendered almost negligible if whole-time veterinary inspectors were appointed to make frequent inspections of the farms and carry out repeated bacteriological examinations. At present the Bovine Tuberculosis Order is administered by part-time officials who are general veterinary practitioners in their districts.

Councillor C. BENNETT (Bethnal Green) referred to the difficulty of enforcing the regulations on the disposal of trade refuse. Although receptacles are now provided by his council for certain stalls, the sides of the roadway were covered with refuse and litter—fish scales, feathers, cabbage leaves, flowers, and rotten fruit. Petri plates of nutrient agar exposed in market streets and incubated showed many colonies, including streptococci and coliform organisms. There were no regulations governing such articles of food as shell-fish and stewed eels prepared for consumption on the spot, sweets, cut fruit, dates, and cakes. Councillor Bennett said that until public opinion could be educated to the point of abolition of the gutter market, food stalls in street markets should be separated from other stalls.

A municipal foot clinic.—Dr. A. T. W. POWELL (Walthamstow) said that at a foot clinic recently set up by his local authority a charge of 1*s.* per attendance was made. The work was carried out by a chiropodist who was also a trained nurse and masseuse. The conditions treated include corns, warts, bunions, ingrowing toenails, dropped arches, inflamed bursæ, minor foot injuries, and rheumatic conditions of the foot. A surprising number of school-children had attended for multiple warts on the soles of the feet, and interdigital ringworm was not uncommon. Foot baths and radiant heat baths were used. A number of patients were referred to an orthopædic surgeon.

INDUSTRIAL HYGIENE.

Sir THOMAS OLIVER spoke of the unsatisfactory *hygienic conditions in the British mercantile marine.* In 1926 30·5 per cent. of the British ships inspected in the port of Manchester were found to be insanitary, against 18·9 per cent. of the Norwegian ships and 17·2 per cent. of the U.S.A. ships. Dr. A. M. CRITCHLEY (West Suffolk) confirmed this view. In most British ships the passengers were the first consideration, then the cargo, and the crew were put into whatever space was left over, with the result that their cabins are small, uncomfortable, and badly ventilated. On the Russian boats there were only two seamen to a cabin, and a recreation room was provided. From a visit to Russia he had found that in some respects industrial hygiene there was in an advanced stage.

The health of chromium plating workers.—Dr. H. B. TRUMPER (medical officer to the Association of British Chromium Depositors) said that chromium plating is an electrolytic process carried on in a special vat filled with a solution of chromic acid, chromates, a small quantity of boric acid and a catalyst, usually chromium sulphate. The deleterious agent in the solution was probably chromic acid, but certain of the ill-effects to workers could also be produced by chromates. The articles to be plated were wired on to a frame, the cathode, and the sharp ends of the wire caused small abrasions of the skin; chrome holes were produced by the action of the chromic acid on the broken skin. Owing to the amount of current used the wire may become hot; burns were liable to be produced on the hands. Nasal ulceration was undoubtedly due to the chromic acid carried up in the spray of hydrogen at the cathode; perforation of the nasal cartilaginous septum when it occurred never healed. Dermatitis due to chromic acid solutions used in plating was comparatively rare; skin changes apart from chrome holes did occur, but Dr. Trumper believed them to be allergic. Iritis was an occasional complication of chrome dermatitis. Vomiting was a symptom to which chromium workers seemed to be liable. Four cases of serious vomiting for which no other cause could be found occurred among a series of 160 persons suffering from chrome poisoning.

Dr. W. E. COOKE (Wigan) described a fatal case of *silico-anthracosis* occurring in a soft-coal miner who during his ordinary work had absorbed sufficient silica to cause lymphatic occlusion. The total silica of the lung-ash was 40·2 per cent. Statistical evidence that coal-miners suffered from pulmonary tuberculosis to a less extent than many other workers had engendered an attitude of complacency towards the mine atmosphere. Not only hard stone dust but all kinds of dust must as far as possible be suppressed.

Occupational dermatitis.—Dr. R. M. B. MACKENNA

(Liverpool) referred to the difficulty of stating definitely in courts of law whether the skin trouble from which a workman was suffering was or was not an occupational dermatitis. He agreed with the view that in all cases of dermatitis there is an inherent defect of cellular structure or metabolism of the skin whereby certain irritants readily cause eczematous reactions. A certain time must elapse during which the patient became sensitive to the deleterious agent. The incidence of dermatitis would probably be reduced to a small extent if seborrhœic and hyperidrotic subjects, those with a family history of psoriasis and sufferers with xerodermia and prurigo, were excluded from entering trades such as bakery, confectionery, French polishing, and cement work.

TUBERCULOSIS.

Dr. JANE WALKER (Nayland, Suffolk), speaking on the *economic aspects of tuberculosis* stated that both incidence and mortality was increasing in the vast army of 2 million women who were employed as clerks, cashiers, and other occupations involving arduous exertion. Dr. D. A. POWELL (Welsh National Memorial Association) said that the disease hardly affected the average married woman. Sir DAWSON BATES, M.P. (Minister of Home Affairs, Northern Ireland), stated that in 40 years in the highly industrialised city of Belfast, the death-rate from pulmonary tuberculosis had been reduced to nearly one-fifth; in 1890 it was 4·7 per 1000, and by 1930 it had been reduced to 1 per 1000.

Problems in treatment.—Dr. J. SHAW (Belfast) referred to the findings of Dr. Percy Stocks and Miss M. N. Karn relating to the first 2794 consecutive cases of undoubted pulmonary tuberculosis coming under the survey of the Belfast Tuberculosis Dispensary in the years immediately following 1914. They found that the progress of patients in the early stage treated in sanatoriums was rather worse than that of those treated otherwise; no difference was apparent in the progress of patients in advanced stages in the two groups. Dr. Shaw, however, did not claim that patients would do better at home than in a sanatorium, but that removal to sanatorium should not be a routine measure. He referred to another curious fact. Dr. A. Trimble, when investigating over a period of seven years the fate of children aged 5 years and under living in tuberculous households, found that they did not suffer a death-rate from all causes significantly different from the normal; possibly supervision by the tuberculosis nurse protected them from infection. Dr. R. C. WINGFIELD (Frimley) put in a plea for turning the tuberculosis service into a purely clinical service, leaving the prevention of tuberculosis to the general public health service.

PATHOLOGY, BACTERIOLOGY, AND BIOCHEMISTRY.

Dr. J. W. BIGGER (Dublin) said that in his opinion abortus fever would remain a rare disease in the British Islands. He wished to distinguish between invasions of the human body by the *Brucella abortus* and infections. The organism might pass through the alimentary duct and produce no effect; it might invade the tissues and grow in lymphoid tissues, and although defeated produce agglutinins so that a high titre might be present although the individual has never had the disease; in very rare instances it overcame the resistance and produced infection. The rate in Northern Ireland was 4 cases per million; in the Irish Free State, 0·7; in England and Wales, 0·3; in Denmark and the State of Iowa the figure reached 85 cases per million. In Iowa the majority of isolations of the causative organism from the blood or urine had been of the porcine strain. The only explanation Dr. Bigger could offer of the high prevalence of abortus fever in Denmark, where the bovine type only existed, was that the cows in Denmark must be affected by a strain more virulent to man than those in Great Britain or Ireland. The ideal laboratory method of diagnosis is the cultivation of *Br. abortus* from the blood, urine, or elsewhere, but the comparatively small numbers of successful isolations make it probable that in many cases the organism never gives rise to a septicæmia or bacteræmia and is not present in the urine. Dr. J. S. BAXTER (Belfast) pointed out that abortus fever was rare in childhood, the age at which the largest amount of milk was consumed. Dr. Baxter suggested that there were two other possible methods of spread, through insect bites and through carriers.

Dr. G. F. W. TINSDALE (Belfast) gave details of attempts to induce abortus fever experimentally in volunteers. In three cases the ingestion of milk contaminated with 24-hour cultures of porcine strains of *Br. abortus* had no effect, nor did infection result when the dose of milk was repeated after preliminary neutralisation of the gastric juice by a large dose of alkali. Six volunteers were given intravenous doses of *Br. abortus* varying from 20–500 million; the only effect was a temporary rise of temperature. Finally, pyrexia typical of undulant fever with loss of appetite and sweats was produced by the intradermal injection of 20 million of live organisms, suggesting that the commonest method of infection was the contact of the skin with infected material. Dr. W. P. O'CALLAGHAN (Dublin) by testing the blood of 416 pyrexial cases sent for examination in suspected cases of enteric fever had found two which gave agglutination in a titre of 1/2500. On inquiry it was evident that both the patients were cases of abortus fever. From one he isolated the *Br. abortus*. Mr. H. G. LAMONT (Ministry of Agriculture, Northern Ireland), when growing the *Br. abortus* from the fœtal calf in cases of infectious abortion in cattle, had found that the pH of the medium must be between 7·5 and 7·8. The acidity of stale milk might account for the infrequency with which the organism was recovered from milk.

VISITS.

Among the visits paid one was to the York Street Flax Spinning Company. The earliest stages of the combing of the flax was carried out by hand by women working in front of hoods provided with exhaust ventilation; notices were put up warning the workers of the danger of contracting tuberculosis if they did not carry out the precautions advised. In the rooms where the flax was combed by machinery exhaust ventilation was also provided. The women and the few men working in the rooms where the narrow flax sliver was passed through hot water in the final stages of its conversion into thread were all bare-footed, a precaution against slipping on any oil spilt on the stone floor. High temperature (109° F.) and high humidity were both present in one room where linen was woven and paste used to promote adherence of the threads.

A visit was also paid to the municipal abattoir which was erected shortly before the war. There are now no private slaughter-houses in Belfast, all the owners having been compensated. Three sanitary inspectors who possess the meat certificate act as detention officers, and see practically every carcass opened; the final decision on any doubtful carcass is made by a veterinary inspector.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Bacteriology and the Study of the Infections.

Second edition. By J. HENRY DIBLE, M.B. Glasg., F.R.C.P. Lond., Professor of Pathology in the University of Liverpool. London: J. and A. Churchill. 1932. Pp. 476. 15*s*.

THIS has proved, as we anticipated it would, a popular contribution to the Recent Advances series. A second edition has been called for within three years of the first, and a demand was made in 1930 for a Spanish translation. The new edition has been revised and considerably enlarged, over a hundred pages being added. Fresh sections are incorporated on the typhoid-salmonella group and antigenic analysis, on brucella infections, on flocculation tests for syphilis, and on certain diseases due to filtrable viruses such as psittacosis, dengue fever, and sandfly fever, while yellow fever has been transferred from the spirochætal to the filtrable virus infections. Most of these new sections are satisfactory. The antigenic analysis of the salmonella group has been very clearly set forth, and in discussing the modern Widal reaction, with its demand for a much larger series of antigens, the author has maintained a well-balanced attitude, pointing out the advantages both of the old formolised and of the new alcoholised suspensions. In the table on p. 87 a mistake has been made in the structure of *B. paratyphosus* A; the H antigenic factor should be T not I, and according to Bruce White's latest work the somatic factor should be vi not xi. The general account of the filter-passing viruses is perhaps rather below the high level of the rest of the book. Since the publication of the first edition a considerable amount of work has been done on these bodies, tending to bring them more and more into line with the ordinary bacteria, and very little of this work has here been included. In regard to ultra-filtration, no reference is made to any paper later than 1927, no account of Elford's work in this country or of Bechhold's in Germany having been included. The relation of the elementary bodies to the infective agent in variola and fowl-pox, for example, as determined both by ultra-violet microscopy, by staining, and by centrifugal methods is not considered. In the next edition we may hope also for an account of recent work on dog distemper. These omissions are noticeable only because the book is such an excellent one. It is a great feat, in these days when bacteriology is expanding so rapidly, to have produced such an accurate and fair-minded account of its most recent developments.

An Index of Treatment.

Tenth edition. By Various Writers. Edited by ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital, and Physician to the Hospital for Sick Children, Great Ormond-street. Bristol: John Wright and Sons, Ltd. 1931. Pp. 1027. 42*s*.

THE tenth edition of this work is edited by Dr. Robert Hutchison alone, whereas originally the late Mr. H. Stansfield Collier and afterwards Mr. James Sherren were associated with him. Many branches of medical treatment are dealt with concisely and lucidly by recognised masters, whose names alone afford a guarantee of efficient handling. On exophthalmic goitre Prof. F. R. Fraser writes a model of what an article on medical treatment should be. We see the mark of the expert in the articles on eye diseases by Sir William Lister, on genito-urinary diseases by Mr. Hugh Lett, and on cardiovascular diseases by Dr. John Parkinson. Dr. J. D. Rolleston writes comprehensively on infectious diseases, Dr. P. H. Manson-Bahr on tropical diseases, and Mr. R. Milne on orthopædics. Mr. James Sherren's articles have been mainly revised by Mr. A. J. Walton, though Mr. Hugh Cairns has become responsible for that on the surgical affections of nerves. Dr. Sequeira's articles have been revised by Dr. J. M. H. MacLeod, and those of Dr. H. Russell Andrews by Mr. Victor Lack.

Among the subjects now included for the first time are anæsthesia for children, diabetes in childhood, erythræmia, glandular fever, hyperparathyroidism, pink disease, serum sickness, and treatment by protein shock and blood letting. Modern views on treatment have been admirably set out in many of the new sections, notably those on Addison's disease and gout. One of the most important and comprehensive articles in the volume is the account of radium therapy by Mr. Stanford Cade.

Where two authors have written under one heading the result is wasteful of space. Moreover, it is confusing to find one such author stating that in asthma injections of peptone are of doubtful value, whereas on the next page his coadjutor is evidently convinced of the opposite. Some of the subject matter has not been brought up to date. Nothing is more striking in modern therapeutics than the effect of a daily dose of Blaud's pill grs. 90 upon the microcytic achlorhydric anæmia of middle life; it is a little disappointing then, on being referred from secondary anæmia to chlorosis in this book, to find quite inadequate doses of iron recommended—for example, ferri sulphatis grs. 4 twice daily.

This edition has become bulky, and if the book were split into two volumes certain articles could be expanded with advantage. It is unfortunate that subjects like acromegaly and acholuric jaundice are given so little space—eight lines between them—whereas hyperthyroidism is given three pages. A good deal that is useful in therapeutics could be said about these two diseases, even in the space of half a page. But not only does the book cover the whole range of medical, surgical, and gynæcological practice from the point of view of therapeutics, the alphabetical arrangement of the subjects and the detailed accounts of treatment make it most suitable for ready reference by the practitioner. The system of cross references is excellent.

An Introduction to Gynecology.

By C. JEFF MILLER, M.D., Professor of Gynecology, Tulane University School of Medicine. London: Henry Kimpton. 1931. Pp. 327. 21*s*.

IN this elementary book, which is based on the author's course of gynæcological lectures to junior students, the teaching is orthodox and exceptionally clear. It has the disadvantage, however, that treatment is almost entirely excluded. Admittedly most text-books used in this country devote far too many pages to operative details which, although they furnish valuable anatomical exercises, can only be learnt properly at the operating table, and moreover are of little importance to those who do not operate. But pathology and treatment are too

intimately connected for the one to be separated from the other, and the student will find his work more interesting from the outset if he is told something of the different methods by which morbid processes are attacked. An attempt has been made to explain the modern views on the function of the endocrine glands in the sexual physiology of the female, but the task, at the moment, is an ungrateful one because any account seems to be out of date as soon as it is written.

It is to be regretted that the Abderhalden reaction for pregnancy is not now ignored in text-books. This work of Abderhalden has never been confirmed and the test has never been used. Hardly any gynæcological work fails to mention this test, and hardly any gynæcologist has ever been known to use it. Surely it is time that it sank into the obscurity which it deserves, especially since the Aschheim-Zondek test is proving really useful.

The Essentials of Biology.

By JAMES JOHNSTONE, D.Sc. London: Edward Arnold and Co. 1932. Pp. 328. 16*s*.

Prof. Johnstone has given us a valuable book, whose title is over-modest if it suggests to the intending reader, by the word essential, that he will be offered only the skeleton of the science. The book presents a well-balanced account of the theories, their proofs and deductions, which make up our knowledge of animal biology, and although details in illustration are largely omitted, we have left a survey of the main results of the most recent work in biological fields, accompanying an epitome of recognised principles. Such a survey is particularly opportune, because biology has shared remarkably in the general development of scientific knowledge during the past fifty years, chiefly by the incorporation into its study of lessons derived from the equally progressive activities of histology, embryology, biometrics, and biochemistry. To this last Prof. Johnstone looks most hopefully as the source of new knowledge, at which no student of modern pathology will be surprised.

The book is divided into two parts, of which the first treats of the individual and the second of the race. In Part I. the organism is considered as a natural thing, the principles of structure, function, and behaviour are dealt with, and a notable feature in these chapters is the care with which all terms are employed, and the accuracy with which the definition of those terms is provided. As an instance a subsection on artefacts may be given. This word is often employed loosely, when it obscures the writer's meaning, leaving the student in doubt why these lifeless things belong to a different category than others which should be termed inanimate. In a section on types of organic structure we have, with the assistance of some neat diagrams, a synopsis of great clearness. No student could pass an examination on the subject by reading these notes, but if he were to use them as a synopsis to be supplemented by the study of one of the usual manuals he would find himself much aided. Indeed, this is typical of the book.

In the second part of the book two chapters, each of considerable length, will be thoroughly informing to many readers—that on reproduction and growth, and that on heredity. Defining heredity as "the progeny of an animal belonging to the same category of organisms as do its parents"—a definition which is admittedly incomplete—the thesis is amplified into a lucid essay on hybridity, Mendelian theories, and the transmission of characters, and is followed by a discussion of the hypotheses of transformism, such as natural selection, Lamarckism, and neo-Lamarckism. The book ends with a highly technical summary of the evolutionary career, and the suggestion that no results of modern biology will enable us to predict transformist processes. The future of the evolutionary career cannot be predicted, for evolution is essentially the appearance of novelties in a process. This is a really good book.

Regulation of Size as Illustrated in Unicellular Organisms.

By E. F. ADOLPH, Ph.D. London: Baillière, Tindall and Cox. 1931. Pp. 233. With 66 figures. 20*s*.

EVERY species of animal has a size which is proper to it, and a limit to the variation in size which is compatible with its existence: *Homo sapiens* cannot be as small as a rabbit or as large as a whale. Similarly in each group of animals there is an upper and lower limit: among terrestrial mammals the elephant and the pigmy shrew. What determines these sizes is one of the major unsolved problems of biology, and in this book Dr. Adolph has brought together the available facts and experiments in relation to the simplest forms—the influence of food, genetic constitution, and so on. The treatment is highly technical and the book will be of great service to students; there is a lengthy bibliography.

Female Sex Hormonology:

A Review. By WILLIAM P. GRAVES, A.B., M.D., F.A.C.S., Professor of Gynæcology at Harvard Medical School; Surgeon-in-Chief to the Free Hospital for Women and to the Parkway Hospital, Brookline. London: W. B. Saunders Co. 1931. 17*s*. 6*d*.

THIS is an interesting review of the recent developments in our knowledge of the internal secretions of the female sex glands, by a well-known American authority on practical gynæcology. The use of the word "hormonology" may give a wrong impression of the subject matter to English readers; the book is not a profound work but a simple readable account of the stages in the discoveries made by the various workers in this branch. The first few pages deal with the early history of the subject, and are followed by a brief description of the sexual cycle in animals, the discovery of ovulation, and the long and intensive search for the hormones of the ovary. The important part played by the hypophysis is next discussed, and five pages are devoted to the Aschheim-Zondek reaction for pregnancy and its clinical applications. Three chapters are devoted to new theories concerning menstruation, parturition, and lactation respectively, and a final chapter discusses organotherapy. The author confesses that at present very little is known about therapy, but claims that experimental findings are so promising that developments of the utmost importance may be expected in the future.

It is a pleasure to read a book by a clinician which gives an accurate picture of laboratory technique without over-burdening the reader with detail. Dr. Graves has evidently taken much trouble in selecting and verifying references, and the reader will find it easy to follow up the subject in any direction.

THE LANCET.

LONDON: SATURDAY, MAY 28, 1932.

THE HOSPITAL ALMONER.

STATE and private enterprise in social service are linked by the work of the hospital almoner. In the annual report of the Institute of Hospital Almoners which has just been issued it is related that there are now 76 hospitals in this country in which an almoner, trained by the Institute, is at work, and that there are 150 students in training at various British universities. The modern almoner, unlike her mediæval prototype, is not merely a dispenser of charitable funds on behalf of another, an "amner to the poore that helpless cry." The nature of the work may vary according to the requirements of the hospital committee which appoints her, but the possible scope of duties is thus set out in the report. To acquire a knowledge of the patients' home conditions for the use of the hospital staff. To coöperate with other agencies in the provision of any requisite ordered, and generally to assist the patients in every way which will enable them to carry out thoroughly the prescribed treatment; and this may include not only convalescent treatment and the provision of instruments, but more extensive plans. To organise the after-care of patients on discharge. To maintain an adequate knowledge of the powers of State and municipal authorities, and to act in close coöperation with them in any matters which have a bearing upon the health and social conditions of the patients. If required, to discuss with patients and to collect their contributions towards the cost of their treatment. To check abuse of the hospital by patients who are (*a*) in a position to pay for private treatment; (*b*) insured under the National Health Insurance Act, entitled to the services of a panel practitioner, and not requiring special hospital treatment; (*c*) unable to benefit by any assistance other than that obtainable through public authorities. To administer Samaritan and other funds for the relief of patients, if called upon to do so. A glance at these duties will satisfy the most thorough-going advocate of social service.

Although inability to pay for the services rendered is not an essential part of the definition of social service, in practice such services are only intended for those who cannot afford them. At the same time the service is not necessarily a charity. In some form or other the patient has often contributed towards his treatment, and he is being asked to do so more and more every year either by some scheme of voluntary assessment, weekly contribution, or hospital savings scheme. He considers, too, that he has been obliged to contribute to his own treatment by indirect means, such as national health insurance payments, local rates and taxes, and he is quick to resent the suggestion that the hospital is a charity. In his mind it is a charity no longer any more than is the non-provided school to which he may send his children. Possibly it is this idea which is at the back of the public's mind in its lamentable failure to pay the hospital for the motor accidents, the treatment of which forms so large a part of the work of casualty departments. It is characteristic of the individualist outlook of the voluntary hospitals that no hard-and-fast rule has ever been laid down as to ability to pay. There is no instruction except that every case is a law unto itself, and it is left to the almoner to decide on its merits. This has never been an easy task for the almoner, and of recent years it has increased in complexity. The special departments which have developed with rapid strides during the last few years add much to the cost of treatment. A complete bismuth meal, biochemical investigations such as blood-sugar curves, artificial pneumothorax refills, and large chest radiograms are only a few examples of the manner in which the patient's treatment in special departments has increased the cost of administration; and these expensive items have to be paid for out of somebody's pocket, whether the hospital be State or voluntary. A patient who can perhaps just afford a doctor's fee cannot afford these extra charges and must seek the help of the hospital. These are problems placed upon the almoner, of which the public who contribute by rates or voluntary subscription know little or nothing. In the case of the voluntary hospitals the social service department is finding itself more and more in the position of a connecting link. There are many organisations—State, quasi-State, and voluntary—to which the patient may be and sometimes must be referred for help. As a rule he knows nothing of these possibilities, and the almoner must direct and advise.

Few people realise how much raw material for research exists in the social service department. The investigations into the fate of children in tuberculous households, and into rheumatism in childhood, are concrete instances which may be cited, and there are numerous others. There are types of cases also which need a careful follow-up inquiry in order to establish certain facts of remote results. Such a task frequently falls to the lot of the department which possesses the necessary machinery for the work. And, lastly, there is looming in the not far distant future a reorganisation of the hospital out-patient department in which machinery must be devised to eliminate the long period of waiting which patients still so often have to undergo. Presumably some system of appointment as in private practice will be evolved. Here again to the social service department may well be entrusted the task of working the scheme. One such is already in operation at the Peto-place Clinic, where during the past year every attendance for treatment has involved a specific appointment, and in the majority of cases the patients arrived at the stated times and were not kept waiting.

Evening appointments give patients in the early stages of rheumatic disease the opportunity of treatment after working hours. Both these innovations enhance the hospital's opportunities for service. The objection is sometimes raised that a hospital cannot afford a social service department. It would be nearer the mark to say that a hospital nowadays cannot afford to be without one. It must be evident to all those who work in them that a large amount of the sickness which hospitals try to cure is preventable ill-health. In the future the work of the social service department will increasingly be that of investigation of the economic conditions of the patient, in the same way as the work of the pathological department is an inquiry into the causes of disease. In other words, the social service department is in reality a unit complementary to the medical, surgical, and pathological units of the hospital.

SIMPLE PNEUMOTHORAX.

A VALUABLE addition to our knowledge of the lung has been made by the publication of HANS KJAERGAARD'S monograph[1] on Spontaneous Pneumothorax in the Apparently Healthy. The condition has been described in France as *Le pneumothorax des conscripts*, an expressive phrase which indicates the incidence of the malady among the young and apparently healthy. All observers are agreed that simple spontaneous pneumothorax represents a separate clinical entity, having no relation with the secondary pneumothorax that may result from the caseation of advanced tuberculosis, the breaking down of malignant tumours, or ulceration due to purulent disease of the lung. It falls like a bolt from the blue, as a rule gives rise to no complications, and heals spontaneously in the course of a few weeks. The cause of the accident has been a subject of discussion since MCDOWELL published the first description of a case in 1856. There are difficulties in accepting either of the two theories which have been propounded to explain the origin of an apparently spontaneous accident, the rupture of an emphysematous bulla, or the ulceration of a subpleural tubercle. Emphysema is far more common in the second half of life than it is in the first. Further, spontaneous pneumothorax is seldom a complication of the pulmonary diseases which are associated with emphysema in early life. It occurs in the apparently healthy. On the other hand, if lung rupture of the type under consideration were due to the ulceration of a tuberculous focus, we should expect at least a proportion of cases to be followed by tuberculous pleurisy or by pulmonary tuberculosis. It is noteworthy that simple spontaneous pneumothorax is not the precursor of either. The rupture is sometimes recurrent, but even when recurrence occurs the patient remains free from any signs of tuberculous disease.

As simple spontaneous pneumothorax is rarely fatal there have been few opportunities for pathological investigation of the condition of the lungs. Dr. KJAERGAARD describes the post-mortem appearances as noted by various observers at six autopsies. In each case the cause of the pneumothorax was found to be the rupture of a solitary vesicle at the apex of the lung, but such an explanation is not always forthcoming. In some cases no cause can be demonstrated despite careful pathological investigation. If the rupture of an air vesicle is accepted as the usual cause of spontaneous pneumothorax, an explanation both of the formation of the vesicle and of its subsequent bursting is called for. A Japanese investigator, J. HAYASHI, at an autopsy on a patient who had had spontaneous pneumothorax, discovered small vesicles at the lung apex, near the bases of which scar tissue was seen. Microscopic examination proved that deformed atrophic lung tissue formed a valve-like structure at the base of the vesicle, permitting air to enter but not to leave it. It is easy to understand how in these circumstances increasing intravesicular pressure might result in rupture. Dr. KJAERGAARD has demonstrated similar vesicles in the lungs of persons who had not suffered from lung rupture, in two instances the pulmonary scarring being due to an old tuberculous fibrosis. It is thus probable that *pneumothorax simplex*, to adopt the author's nomenclature, is due to the bursting of valve-vesicles of a kind similar to those described. It is also possible that some of these structures are due to the apical tuberculous scars that are so often found at autopsy unassociated with any evidence of active disease.

Spontaneous pneumothorax is probably a less rare condition than it is usually supposed to be. Symptoms are seldom severe, and the practitioner who does not bear in mind the possibility of such an explanation of sudden thoracic pain may be discredited if his patient should feel that "a stitch in the side" is an inadequate explanation of his symptoms, and seek advice from a radiologist. The condition when diagnosed is sometimes wrongly treated by prolonged sanatorium residence. Whatever the ætiology of the disease it is not the precursor of phthisis, and treatment which may be appropriate for a tuberculous pleurisy should not be recommended. The patient should be reassured as to his future, rest need not be continued for long after the lung has fully re-expanded, and after a short convalescent holiday a return to work should be permitted, provided that the lung has completely re-expanded. Such a programme, however, obviously does not apply to the rare cases in which recurrent rupture, the effusion of blood into the pleura, the persistence of pulmonary collapse, or other complications demand special treatment and prolonged care.

[1] Acta Med. Scand., vol. xliii., suppl.

A QUARTERLY HEALTH BULLETIN.

THE Health Organisation of the League of Nations which came into existence ten years ago publishes records of international conferences and other occasional papers, but has hitherto limited its regular output to a weekly fascicle and a monthly report on the world incidence of

epidemic and other diseases. In the monthly report, it is true, space is reserved for a more extended account of some disease of topical interest, but since the report circulates only among medical administrations and health officers its scope as a medium for expressing the more general work of the health side of the League is restricted. Those who wish to follow this work have been obliged to pick out for themselves the main features of health interest in the general mass of League literature—a task of no mean order. To make this material more accessible and consequently more widely known it has been decided to embody it in a new periodical,[1] entitled the *Quarterly Bulletin of the Health Organisation*, published in two editions, French and English, the first number of which has just appeared. Those whose appetite is whetted by reading the articles which it contains can readily obtain the full literature on which they are based. The fact that some of the articles are the first of a series on the same subject should be noted. In subsequent issues the contributions will no doubt come to have a natural and well-understood order; meanwhile the present issue serves to illustrate how the Health Organisation touches many and varied branches of medicine.

The first article in the *Bulletin* presents the resolutions of the London conference of June, 1931, on the value and use of immunising agents in the prevention of diphtheria, at which the English representatives were Sir Henry Dale, Dr. E. H. R. Harries, Dr. P. Hartley, and Dr. R. A. O'Brien. These important resolutions, of which we print the text on p. 1165 of our present issue, commend themselves in the main to opinion in this country where there is general agreement from experience amongst nurses in isolation hospitals and children in residential schools—notably those at Greenwich, Mitcham, and Norwood—that efficient immunisation abolishes diphtheria. Resolution 2 puts in its right place the occurrence of reactions after injection of prophylactic, for in the immunisation of children little trouble is encountered whatever prophylactic be used. We cannot trace any significant number of reports of trouble in England from the prophylactics employed, and Dr. E. H. T. Nash showed as far back as 1924 that a group of children could be injected with formol-toxoid without suffering inconvenience. As Nash also found, it is amongst adolescents and adults, still unimmunised in this imperfect world, that undesirable reactions are likely to occur, particularly when formol-toxoid is used. Formol-toxoid (anatoxin) is recommended; it is not clear how far the prophylactics most favoured in England, toxoid with antitoxin—either as mixture or floccules—are here included. The suggestion in Resolution 6 that when subcutaneous injection is not possible prophylactic may be applied to the nasal mucous membrane will probably surprise English workers. The conference resolved that it is unnecessary to carry out the Schick test before immunisation. There certainly are conditions, particularly in work on the large scale and where the natural positive rate is high, in which some administrators might feel free to discard the test, but amongst urban children, where more than half may be immune before presenting themselves for immunisation, and after immunisation, most of our own health officers prefer to use the test. The suggestion that immunisation should be postponed until after the child is twelve months old may be wise as a general rule, though since diphtheria is often met with in the second six months of life, some feel that immunisation should be commenced when children are six months old. The resolutions as a whole received the official approval of the Health Committee as long ago as October, 1931; they merit close attention from public health and school medical officers in the country and should be known to every practitioner.

The *Bulletin* contains a compendious report by Sir George Newman on medical education in England, the first of a series to be devoted to the study of problems raised by medical training in European and overseas countries—a study, we are told, arising out of a request made to the League of Nations by the Chinese National Government. The report consists of an introduction to the general conception of medical education, its function and purpose; an account of the hierarchy of medical practice in England; and a critical review of the existing system of medical education. A report by Prof. R. Burri, director of the Institute for Milk Industry at Berne, on the milk-supply in towns in the United States, is the outcome of a desire for further knowledge on the modern practice in milk control expressed at the International Conference on Rural Hygiene held at Geneva in June, 1931. Lieut.-Colonel A. G. McKendrick reviews the results of anti-rabies treatment as practised at the various Pasteur Institutes of the world. This is the second analysis of its kind carried out on behalf of the League in pursuance of a decision taken by the International Rabies Conference which met at Paris in 1927. Of 69,707 persons treated for whom records were available (of whom no less than 53·5 per cent. were Europeans) 333 died of rabies, a mortality of 0·48 per cent. Of the biting animals 87 per cent. were dogs. The figures submitted indicate a probable advantage in favour of the modified dilution methods of Högyes and Högyes-Phillips. In an article on tropical pneumonia, Dr. R. Gautier, a member of the Health Organisation, deals fully with the ætiology, prevention, and treatment of this malady, whose case-mortality may be as high as 58 per cent. He advocates a plan of campaign to study the peculiar susceptibility of natives to the pneumococcus and of the types of pneumococci existing in the various tropical countries so as to allow in future for the use of homologous vaccination and serotherapy. Finally, there is a report by Dr. Rajchman, medical director of the Health Organisation, on the work undertaken by the League to protect the population endangered by the recent floods in China.

[1] London: Allen and Unwin. League of Nations Publications Department. 2*s*.

ANNOTATIONS

THE RESURRECTION MEN.

A PICTURE of the more famous crimes associated with the activities of the resurrection men, and entitled "The Inhumanists,"[1] suggests the question why those activities have become of topical interest. Did Dr. McBride, in the terrible little play which we recently reviewed in these columns and which was afterwards played with success in a London theatre, popularise body-snatching as a theme for a drama, or did he respond to the feeling that at the present moment the public were curious concerning a subject which 100 years ago was of terrible import? Mr. Turner sketches correctly the circumstances both of the law and of medical education which led to dead bodies becoming an article of merchandise to be dealt in by those in charge of anatomy schools on one side and the disreputable order of Jerry Crunchers on the other. He goes on to narrate with horrid detail the methods taken by resurrection men and the counter-measures of the forces of the law, finally relating a series of sensational crimes. We have here something of the skill of Poe in painting lurid pictures, and the excerpts from the diary of Joseph Naples, in possession of the Royal College of Surgeons of England, rival anything Poe ever wrote in their cold horror. In this diary a leading resurrectionist records his activities as body-snatcher and gravedigger, setting down his crimes as the items of a day's work. In one chapter Mr. Turner draws an analogy between the methods of the modern American gangster and those of the London resurrectionist a hundred years ago, which shows how seldom a precedent cannot be found for the law-breaker. "Like modern American racketeers," he writes, "rival gangs of resurrectionists had allotted territories both for producing and marketing, but these arrangements fell to pieces as the supply failed to keep pace with the demand, and ruthless inter-gang warfare broke out. The paramount corpse king would fix famine prices and ask as much as 20 guineas for a single body. A rival gangster would offer supplies at a lower price and obtain the contract, as it were, but as soon as the corpse king knew of it the price-cutter would be shadowed day and night until an opportunity occurred to betray him to the police in the act of exhumation, and he would be put out of the way for six months or so." An impulse to write "The Inhumanists" seems to have been the author's feeling that Edinburgh is wrongly accused of having been the original centre of the body-snatching trade—a reputation acquired by the tremendous excitement over the Burke and Hare murders—whereas, says Mr. Turner, London was the real centre, one famous London surgeon being the mainspring of the trade. To-day the enlightened coöperation of public authorities, kept alive by the official inspectorship of anatomy, ensures the supply of subjects to medical schools.

[1] The Inhumanists. By Cecil Howard Turner. London: Alexander Ouseley, Ltd. 1932. Pp. 286. 8s. 6d.

A NEW FACTOR IN THE CAUSATION OF OSTEOMALACIA.

LAST year in our columns Dr. Dagmar Wilson gave a very interesting account of osteomalacia in the Kangra Valley in India. Osteomalacia in India as a whole attacks women, and amongst women only those whom the custom of purdah confines to the house, but in the Kangra Valley there are two outstanding peculiarities: men as well as women, and field workers as well as people keeping to the house, are affected. Clearly some new factor must come into play. The most likely contributory factor would be a salt deficiency, a deficiency of calcium or of phosphate in the diet, of so severe a degree as to leave the body in negative calcium balance, even though exposure to the sun was quite considerable. In cattle such a state of affairs, due to a phosphate deficiency in the pastures in certain parts of the world, is well known. Since last summer Dr. Wilson has put this theory to the test, and relates in our present issue that in the case of persons not starved of sunlight a daily dose of tricalcium phosphate caused rapid alleviation of the painful symptoms, but that in those deprived also of sunlight the addition of the salt caused little benefit; in the latter case the deficiency would be a dual one, of vitamin D and calcium or phosphate, and correction of the salt deficiency alone would not effect a cure. The season at which the cures took place is not mentioned, but presumably there is no likelihood that they could be attributed to change of season, as was, for instance, the case in untreated cases of hunger osteomalacia in Vienna in the post-war years. Dr. Wilson is indefatigable in her efforts to help these suffering people as well as in the pursuit of knowledge, and her work has the additional merit of being truly practical, in that she constantly endeavours to find means of making up these dietary deficiencies which shall be so cheap as to be easily accessible to the poorest in India. Thus she has also made trial of sun-irradiated yeast as a source of vitamin D, and finds that it is efficacious in those cases of osteomalacia where there is a deficiency of that vitamin, such cases being, as has been pointed out, the vast majority of those which occur in India.

NORMAL GASTRIC ACIDITY.

EXTREME variations in gastric acidity are known to occur in normal individuals and to be compatible with perfect health. No normal constant value is therefore available and this is a serious disadvantage in interpreting the results of test-meal analyses. Hyper- and hypo-chlorhydria are purely relative terms, compared with an "average" degree of acidity as judged from a number of analyses; but for any individual "average" acidity is not necessarily the normal. Moreover, varying types of test-meal curves may be obtained in the same individual under different circumstances. Factors influencing the curve include the type of meal and the age of the patient. Attention has lately been focused upon the changes that may normally occur with advancing years. Some workers at the Mayo Clinic have examined[1] the results of gastric analyses in 3746 persons in whom they were satisfied that no disease affecting gastric secretion was present. The test-meal employed was a mixture of "eight arrow-root cookies and 400 c.cm. of water," and in general the one hour sample was used for analysis; in some cases histamine was used in addition as the stimulus. The conclusions drawn are as follows: Free gastric acidity appears to increase rapidly from childhood up to the age of 20 years; in men the average free acidity, at one hour, lies within 45 and 50 units

[1] Vanzant, F. R., Alvarez, W. C., Eusterman, G. B., Dunn, H. L., and Berkson, J.: Arch. Int. Med., 1932, xlix., 345.

(c.cm. of N/10 sodium hydroxide required to neutralise 100 c.cm. of gastric juice) between this age and 40, after which it falls to a level of about 30 to 35 units. In women 30 to 35 appears to be the normal level throughout adult life. At the age of 60 some 28 women in every 100 fail to show any free acid on fractional analysis and 23 per cent. of men are similarly achlorhydric. Other workers have also noted this high percentage of achlorhydria in normal persons over 60 years of age, and it has been suggested that this is the result of a senile atrophy of the gastric mucosa. The authors of this investigation attribute it to a hereditary tendency rather than to a morbid process.

These studies of gastric acidity certainly provide useful data for future comparison, even if the hope of the authors that they will be now able to "detect with certainty small abnormalities in the secretory power of the stomach due to disease," is not realised. It is difficult to believe that small variations in gastric acidity would ever be of great practical significance. As our knowledge of gastric secretion increases it appears more and more probable that gastric acidity is at least in part dependent upon a general condition of the body. For example, the high acidity common in duodenal ulcer is more likely to be the predisposing factor to the formation of the ulcer then a reflex effect produced by the ulcer. It is significant that the highest acidity is normally found in men between the ages of 20 and 40, at which time the incidence of duodenal ulcer is highest. As we have already observed [2] it is possible that gastric acid secretion provides one means of maintaining the acid-base equilibrium of the body, and is thus subject to variations in the blood and tissues outside the stomach.

The data here recorded may therefore be regarded as suggesting rather the soil upon which ulcer or carcinoma, for example, may develop, than as providing a set of standards for the comparison of the changes found in gastric disease. The narrow view that various types of test-meal curves are produced by local disease in the stomach and are diagnostic of such disease is giving way to a broader conception of a gastric "constitution" upon which disease tends to form.

THE POSITION OF MEDICAL RESEARCH.

THE Journal of the Research Defence Society, entitled the *Fight Against Disease*, contains in its latest issue an analysis of the 1876 Act (Act 39 and 40 Vict. cap 77) under which research involving the use of living animals is permitted in this country. Medical progress has been impeded, and research workers have been harassed with malevolent accusations against them, by vigorous antagonists, but many, if not all, of the points upon which public opinion asks for information will be found in the wording of the Act, whose relevant passages are cited in the journal. Restrictions upon the performance of experiments on living animals are categorical, and so are the provisions under which in certain cases these restrictions may be modified. The issue of the licences, making the research work legal, is carefully controlled, and prompt legal proceedings can be taken against the author of any experiments in contravention of the Act. The public is gradually appreciating in greater measure on which side truth lies, and the recent action of the Anti-Vivisection Hospital makes it clear that the opponents of experimental research, some of them at any rate, realise that inhumanity may result from actions which are taken expressly in the cause of humanity. The authorities of this hospital are now prepared to empower the administration in their hospital of anti-tetanic serum in accordance with accepted medical knowledge, and the London County Council has withdrawn accordingly its embargo against the taking of accident cases to the institution by their ambulances. The journal announces that Sir Arthur Keith will give the next Stephen Paget memorial lecture at the annual general meeting of the Society on Wednesday, June 15th, in the lecture hall of the London School of Hygiene and Tropical Medicine.

[2] THE LANCET, Jan. 2nd, p. 29.

CONTROL OF SCARLET FEVER IN INSTITUTIONS.

UNTIL a few years ago the measures available for the control of an outbreak of scarlet fever in an institution or in a children's ward were limited to the removal of clinical cases to an isolation block or the fever hospital and the quarantining of those exposed to the disease. The occurrence of dropping cases at irregular intervals might prolong this period of quarantine indefinitely, and meanwhile the work of the institution or ward was badly hampered. Save by a few rare spirits, the hæmolytic streptococcus described by the Dicks has been accepted, upon evidence which is really overwhelming, as the causal organism of the disease. As M. L. Blatt and M. L. Dale [1] point out, the subsequent discovery by the same workers in 1924 of the production of a specific toxin and of its antitoxin have together permitted of a rational scientific programme for controlling the disease. Most of the measures now available are in routine use in many fever and children's hospitals in this country and have been described in our columns by R. A. O'Brien.[2] They were employed systematically and successfully by Blatt and Dale in the control of an outbreak in an infant and maternity hospital in Chicago at a period when scarlet fever was very prevalent in that city. The significance of periods as long as 19 and 14 days between the first four cases did not at first suggest anything unusual to them, but a fifth case occurred at a further long interval under conditions which suggested that adult carriers having access to any of the five floors of the institution were the means of transmission. Thereupon rigid preventive measures were instituted. All clinical cases had been already removed to a fever hospital. The adult patients and staff, amongst whom were discovered seven with positive cultures, were required to wear, except at meals which they took together, gauze masks until three platings upon blood agar could be shown to be negative for hæmolytic streptococci. Children with positive cultures were isolated in special wards on their respective floors. A Dick test was performed upon everyone in the hospital. Three children amongst those who had been in most recent contact with the last cases were found to be positive reactors. These were passively immunised with scarlet fever antitoxin and a week later active immunisation by means of multiple skin test doses of toxin was begun. All other positive reactors amongst patients and attendants, except three very young infants, were actively immunised. The last case of scarlet fever developed two days after these measures were taken; significantly, in a positive reactor who had not received antitoxin. The institution was not closed to admissions, but during the succeeding six weeks Dick

[1] Jour. Amer. Med. Assoc., April 23rd, p. 1437.
[2] THE LANCET, 1929, ii., 296.

tests were done and cultures obtained in the case of all new entrants, and if necessary immunisation was carried out. No further cases developed. Commenting on the procedures Blatt and Dale note that the Dick toxin used for active immunisation produced severe reactions in many older children and adults although, with one exception, active immunity was brought about in a month by five graded doses of toxin at five day intervals. Of the 176 children originally tested 43 (24 per cent.) were positive. It was possible to retest 56 of the original 176 infants six months later. The others had presumably left the hospital. Of 13 originally immunised Dick-positive reactors a four months old infant, negative one month after immunisation, had again become positive. Of 43 original Dick-negative infants five gave a positive test six months later. These "mutations in skin reactivity" in this small series of infants are doubtless to be explained in the same way as similar changes in the sign of the Schick test in infants. They are due in the one case to the inhibiting effect of maternally transmitted passive immunity upon the production of active immunity and in the other to the gradual waning of this passive immunity as the months pass.

THE CAUSES OF FILARIAL SYMPTOMS.

IN a paper read at Manson House, before the Royal Society of Tropical Medicine and Hygiene on May 19th, Dr. F. W. O'Connor, of the Presbyterian Hospital, Columbia University, New York, dealt with the factors which underlie the disease syndrome in infection with *Wuchereria bancrofti*, as its valid name now is. Having pointed out how the original conception, that the symptoms of filariasis were due to the filaria, had tended to give place to one implicating bacteria as essential in causation, he marshalled evidence, much of it new, against this conclusion. He first pointed out the territorial correlation between the symptoms, the filaria, and the local insect vector, and the striking lack of correlation between chronic filariasis and bacteria; strengthening his argument with similar instances in other lymphatic diseases. He surveyed the bacteriological studies made in connexion with filariasis, and showed how often, even in acute filarial lymphangitis, cultures from blood and from local material have been sterile; and it is of course the many instances of failure by experienced bacteriologists to grow bacteria which are here of positive importance. The successful instances he attributed to secondary infections of the skin caused by the scratching induced by the intense irritation found in this condition so soon as acute symptoms cease, scratch marks being a striking feature of these cases. Next followed the inquiry as to whether the clinical and pathological features of filariasis were such as to establish the responsibility of the parasite for them. His reading of the histological evidence is that, provided there is lymphatic obstruction higher up, living worms produce a polypoid endothelial proliferation of the lymphatic vessel in which they live, which stops short of complete occlusion but nevertheless often suffices to kill the parasite; when, however, this dies complete occlusion may be expected. The share of the daily death and daily destruction of microfilariæ (for evidence in that direction accumulates) in the production of ill-effects needs further study. Regarding attacks of acute lymphangitis, the conclusion was reached that they are allergic, and correspond to a moment when death of worms liberates sufficient protein to overcome the resistance set up by previous sensitisation. For the reality of hyperfilariation—a matter which had been constantly in Sir Patrick Manson's mind, of its apparent commonness in young people in endemic areas, and of its ability to produce directly or indirectly the blockage which results in elephantiasis and other lymph stases, Dr. O'Connor gave striking evidence. The cumulative effect of the steps in his line of argument—that the filaria is the essential cause of the symptoms constituting the filarial syndrome—was impressive and met with acceptance.

Perhaps the most striking point which came out in the subsequent discussion was the difficulty of drawing safe general conclusions in the present state of knowledge. In Grenada, for instance, the ordinary insect host is present and can be infected, but the disease is absent. We are ignorant of what happens to the microfilaria in the cryptic hours between midday, the hour about which, as Dr. O'Connor's investigations indicate, parturition takes place when there is microfilarial periodicity, and midnight, the hour about which the numbers of these larvæ reach their height in the blood. The different aspect of the filarial syndrome in different geographical areas was mentioned, with the suggestion that the details of the lymphatic system had not perhaps precisely the same structure in different races of man. That the presence of elephantiasis was accompanied by hitherto unsuspected biochemical changes was shown by a cited instance in which skin reactions to the dirofilarial antigen of Hamilton Fairley (see p. 1167), markedly different from the normal, developed when it was injected into elephantoid skin. The further investigations which Dr. O'Connor is about to carry out in Porto Rico are being undertaken in the hope of advancing knowledge on these and kindred matters by an extension of the methods which in the hands of his technical staff have already given such fruitful results.

VITAMINS AND RADIATION.

VITAMIN research has for many years engaged the attention of physiologists and biochemists and has of late been a field of work chosen by pure organic chemists. The progress recently made towards the identification and preparation of these once mysterious substances has been astonishingly rapid, so much so that a stage has already been reached when profitable attempts may be made to determine their actual molecular structure. Physical chemists are now taking up this problem, and F. P. Bowden and C. P. Snow,[1] of the Laboratory of Physical Chemistry, Cambridge, have lately reported a series of experiments which promise to shed light on the constitution and possible methods of production of the vitamins. They employ photochemical and spectroscopical methods to follow the changes which take place in the structure and properties of certain of the vitamins and pro-vitamins as the result of exposure to radiations of strictly defined wave-length, the essence of their technique being to employ monochromatic light as the source of radiation instead of using light filters. Their results already suggest that they may have accomplished the actual conversion in vitro of the pro-vitamin carotene to vitamin A. On spectrographic analysis carotene shows characteristic absorption bands, one of these being situated at 2700 A. A solution of carotene was exposed to radiation of about this same wave-length—namely, 2650 A, selected from the spectrum of mercury.

[1] Nature, May 14th, p. 720.

After a few hours of such irradiation a new absorption band appeared in the spectrum of the solution, situated at 3280 A, and an absorption band in this situation is fairly generally recognised as characteristic of vitamin A. The obvious presumption is that carotene has been converted to vitamin A by the irradiation and further work is now in progress to determine by other methods, including biological experiments, whether this conversion can in fact be proved.

The new work brings to mind at once the well-known method of producing vitamin D by irradiation of its parent substance ergosterol. Just as it has long been known that exposure to radiations of short wave-length can destroy vitamin D as well as bring about its synthesis, so it now appears that vitamin A can be destroyed by exposing it to radiation of suitable wave-length. Similar results were obtained with vitamin B_1; it was apparently possible to destroy the activity of Jansen and Donath's "crystalline vitamin B_1" by subjecting it to radiation of 2537 A. It seems possible that the monochromatic light technique may lead to important advances in knowledge of the constitution of the vitamins.

ANOREXIA NERVOSA.

In the tenth annual report of the Cassel Hospital for Functional Nervous Disorders the medical director gives a summary of the 13 cases of anorexia nervosa that have so far been treated at Swaylands. He infers that the prognosis is good, that a comparatively simple treatment alone is necessary, and that the condition is a psychological one with no primary physical problems. He lays stress on the clear definition of the syndrome, and corroborates the description of it given by the Medical Society of Individual Psychology.[1] It has, he says, seven characteristics, which were present in all his cases. The three positive symptoms are anorexia, loss of weight (sometimes carried to the point of emaciation), and amenorrhœa; three other characteristics are that the patient is female, unmarried, and of an age between puberty and about 24; and a constant negative symptom is that, despite her "deathly appearance," she stoutly maintains that she is never tired. Dr. T. A. Ross's insistence on the monosexual incidence is interesting. At a discussion held by the Medical Society of Individual Psychology in the spring of last year,[2] Dr. W. Langdon Brown described four male cases, and Dr. G. Gordon described mild cases among men over 30 in suicidal wards; but Dr. Ross points out that young men sent to hospital with anorexia and emaciation without physical lesion are, as a rule, the subjects of grave mental disease with delusions, and are therefore in a different category. Dr. Gordon was obviously referring to frankly psychotic cases, and Dr. R. D. Gillespie[3] says that he has never seen the symptoms "in pure culture" in a man. Dr. Ross qualifies the restriction to unmarried girls by admitting that he has met socially a married woman obviously suffering from the disorder, but that she was childless; Dr. Langdon Brown related adult cases in married women, but these seem to be rare. Dr. F. G. Crookshank, in the discussion mentioned, distinguished the reaction in young persons as a move towards independence, and in adults over 30 as constructive suicide. It is the experience of the Cassel Hospital that patients are not brought under care until they have been ill for many months, and it has become a point of honour to continue the illness. Deep psychological examination has not proved to be necessary, but on superficial examination most of the patients have shown a dread of becoming fat, and a few have been afraid of becoming conspicuous through development of the breasts. Although dominance of the mother was found to be important, in accordance with the experience of speakers at the discussion, Dr. Ross says that in some cases the parents were meek enough; that anything might upset the equanimity of these patients and the condition could not be correlated with anything specific. One patient appeared to have been jealous of a brilliant brother, and to have desired to attract attention. The case-histories have failed to explain the amenorrhœa; the stoppage does not seem to be the result of the emaciation and the menses often do not return until some months after recovery. Eleven out of the 13 patients did well, and the details given in the report are of great interest. Parents nearly always report improvement in disposition as well as in physical state. Treatment is based on the Weir-Mitchell method of rest in bed and increasing diet, absolute isolation from family and friends, and massage. A nurse should watch for the first few weeks to see that food is swallowed, but patients coöperate heartily in the treatment once they realise that the doctor is in earnest. No reliance is placed on elaborate systems of diet such as the one recommended by Dr. R. S. Allison and Dr. R. Picton Davies.[4] The two patients who did not become well cannot be called failures; one gained 10 lb. in six weeks and was then obliged to go abroad and has not been heard of since; the other has been at work since discharge but is thin and a food faddist.

[1] Individual Psychology Publications, Medical Pamphlets, No. 2. London.
[2] THE LANCET, 1931, i., 865. [3] Ibid., p. 995. [4] Ibid., p. 902.

PENTOSE NUCLEOTIDE IN LEUCOPENIA.

At a meeting of the American Association of Physicians, held at Atlantic City on May 4th, further successful results in the treatment of certain intractable forms of anæmia were reported by Dr. Henry Jackson, Jr., and his collaborators at Harvard. They had previously recorded[5] the treatment of 20 cases of agranulocytic angina and other forms of malignant neutropenia with Nucleotide K96,[6] and since that time an additional 38 cases have been treated by them by the same method, no other specific treatment being used. Of these 58 patients, 43 suffered from typical agranulocytic angina, 13 from extreme leucopenia following sepsis, and 2 from very severe benzol poisoning. In all 41 recovered completely, including 28 in the first group, 11 in the second, and both cases of benzol poisoning. The prognosis did not seem to be affected even by a white cell count below 1000, complete absence of polymorphonuclear neutrophils, or extreme hyperpyrexia. The method of treatment is as follows: 10 c.cm. of the preparation is injected intramuscularly twice a day until the white cell count has definitely risen. An injection of 10 c.cm. is then given intramuscularly once a day until the count has been essentially normal on at least three consecutive days. Thereafter the patient is watched for a possible relapse. In certain resistant cases a rather larger dose led to a distinct increase in white blood-cells, when the usual dose had not been effective. As a rule few if any untoward reactions are observed;

[5] Jackson, H., Jr., Parker, F., Jr., Rinehart, J. F., Taylor, F. H. L.: Jour. Amer. Med. Assoc., 1931, xcvii., 1436.
[6] Obtainable from Messrs. Menley and James, 64, Hatton-garden, London, E.C.1.

but occasionally nausea, precordial distress, and dyspnœa occur, and much more rarely there may be a rise of temperature. Clinical and hæmatological improvement are said to occur consistently about five days after treatment is instituted, irrespective of the previous duration of the illness. The preparation appears to be of no value in leukæmia, aleukæmic leukæmia, or aplastic anæmia. This is important in so far as the differential diagnosis between agranulocytic angina and aleukæmic leukæmia is not easy without examination of the bone-marrow. Toxic symptoms following arsenobenzol therapy are now happily rare, but as we pointed out two years ago[1] agranulocytosis is probably far commoner than the number of cases recorded would suggest. It has hitherto proved fatal in a large proportion of the cases diagnosed, and the results recorded by the Harvard workers with nucleotide are therefore most encouraging.

AGE OF DENTISTS.

In the course of his twenty-second address from the chair at the Dental Board of the United Kingdom, Sir Francis Acland gave some interesting figures which had been got out in his office as to the ages of dentists registered under the Act of 1921. Their average age is 47¼ and the average expectation of life of persons of this age is 22 years. "I am afraid," said Sir Francis, "to dogmatise about averages, for I do not visualise them in a concrete form like the boy who said they were 'things hens laid eggs on,' and therefore I cannot say whether this means that this is the average expectation of life of persons of this *average* age, nor whether the figures mean that in 22 years half the total number, which is 6748, will probably still be alive." It may be of interest, he added, to give the numbers in different age-groups. There are 5 between 80 and 84 years, 103 between 70 and 80, 687 between 60 and 70, 1683 between 50 and 60, 2676 between 40 and 50, and 1594 between 32 and 40 years.

THE CAROTID BODY.

In an annotation last week we quoted the statement that Czermak was the first to note that compression of the vasculo-nervous bundle in the neck produces slowing of the heart beat. But, as Sir Thomas Lewis points out in a lecture on vasovagal syncope and the carotid sinus mechanism,[2] this observation was really made by Caleb H. Parry, who described it in his Inquiry into the Symptoms and Causes of the Syncope Anginosa, commonly called Angina Pectoris (1799). In his lecture Lewis brings forward the interesting hypothesis that the central and efferent parts of the carotid sinus reflex mechanism are disturbed in the syndrome of common fainting attacks—or, as he calls them, vasovagal syncope—in which strong vagal effects are combined with depressor vasomotor effects. In support of this he suggests that the alimentary symptoms associated with vasovagal syncope may be the result of alteration in the alimentary tract movements previously noted by Danielopolu to take place when pressure was made on the carotid sinus—namely, an initial inhibition followed by increased activity of the stomach. The form of syncope to which he refers should be distinguished from the "vasovagal" attacks described by Gowers in which consciousness is seldom or never lost. Dr. J. A. Ryle,[3] however, defends the latter use of the term, since his experience suggests that both vagal and vasomotor phenomena form part of Gowers's syndrome.

[1] THE LANCET, 1930, ii., 1405.
[2] Brit. Med Jour., May 14th, p. 873. [3] Ibid., May 21st, p. 956.

ÆTIOLOGY OF ALOPECIA AREATA.

Of all dermatological problems none is more provocative than alopecia areata. The current theories of its causation are generally familiar. There is focal sepsis in teeth, tonsils, and alimentary tract; Jacquet's dental reflex hypothesis; the older theory of exogenous infection; trophic nervous disturbance; and finally an endocrine vago-sympathetic syndrome. But none of these suffices to explain the symptoms in a scientific sense. Armas Cederberg,[1] of Helsingfors, holds that of all concurrent or associated manifestations oral sepsis appears to be the commonest, and this is perhaps true. But the association does not imply that the sepsis is to blame for the alopecia, and Sabouraud in his latest monograph on the subject [2] cites more than one unhappy case of total dental clearance without a particle of benefit to the hair loss. H. W. Barber, on the other hand, has seen recovery after tonsillectomy and the use of a streptococcal vaccine, and it has certainly become the custom in English clinics to examine the mouth and throat in every case of alopecia areata and usually in vitiligo too. Cederberg, however, is not content with the streptococcal as the specific element in causation. According to his researches, oral and dental spirillæ are the true cause, and reach the lymph channels and the general circulation either through microscopic abrasions of the mucous membrane, or in symbiosis with other organisms. A further stage in the thesis asserts that spirillar infections are characterised by a characteristic affinity for the pigment and pigment-forming apparatus of the skin, whether manifested by hyperchromia or a deficiency in that respect, as in vitiligo. The most obvious example of such cause and effect is the case of syphilis, in which modified types of alopecia and vitiligo are both observed, while a spirillar (not spirochætal) balanoposthitis is not infrequently followed by more or less permanent local leucoderma and marked disturbances of the genital pigment distribution. For direct proof of the ætiological rôle of spirillæ in alopecia, their demonstration in situ is necessary, and Cederberg claims to have succeeded in several cases after prolonged search. He submits two microphotographs in support of his claim, taken from sections of a recent case of alopecia areata. Single organisms are observed, stained by the Levaditi process in the interstices between epithelial cells, and in the lymph channels both in the epidermis and the derma. Groups or colonies are also evident, and the polymorphism suggests treponemata and leptospirillæ. In the basal cell layer the place of the normal pigment appears to have been taken by the stained organisms. Of greatest interest is their presence and apparent growth along the walls and in the sheaths of hair follicles, where a toxic pilopapillitis explains the resulting hair loss and occasional destruction of the hair follicle. It cannot be definitely ascertained at present whether the cell itself can be penetrated, but it is clear that the pigment-forming cells are highly susceptible, a fact which sustains Sabouraud's original observation that in alopecia areata the ordinary tissue reactions and proliferations are of the slightest. "Toutes aussi concordent à témoigner d'une intoxication locale profonde."

[1] Derm. Woch., 1932, No. 16, p. 539.
[2] Pelades et alopécies en aires, Paris, 1929.

SPECIAL ARTICLES

MEDICAL RESEARCH AND PATENT LAW.

UNANIMOUS CONCLUSIONS.

THE conference on medical research and patent law, called by the Council of the British Medical Association, has held two meetings, at the first of which Dr. R. Langdon-Down, who presided, said that the Association had reached an impasse in its own discussion of the principles involved, and was inviting the coöperation of others in reaching conclusions. The conference was made up of representatives as follows:—

Royal College of Physicians of London: Dr. Terence East, Prof. C. Lovatt Evans, and Dr. Robert Hutchison.

Royal College of Surgeons of England: Sir Charles Gordon-Watson, Mr. R. G. Hogarth, and Sir Holburt Waring.

Medical Research Council: Sir Henry Dale, Sir Walter Fletcher, and Prof. J. J. R. Macleod.

British Medical Association: Sir Robert Bolam, Dr. C. O. Hawthorne, Dr. Arnold Lyndon, and Mr. H. S. Souttar.

At its second meeting (on May 18th) the conference soon came to unanimous agreement on four resolutions put forward by Sir Henry Dale, Sir Walter Fletcher, and Mr. H. S. Souttar, which, after some verbal amendment, were carried in the following form:

1. That this conference is of opinion that the granting of further patents in the medical field is undesirable in the public interest, and would welcome any action to prevent or regulate such further grants by international agreement.

2. In the opinion of this conference, experience has shown that research and discovery have been hindered rather than promoted by the granting of patents for inventions dealing with the following classes of substances used in therapeutics and practical dietetics: serum, toxins, antigens, viruses, bacteriological products, active principles natural to the animal body, vitamins. They consider it desirable in the interests of medical science and practice, that no further patents should be granted for inventions dealing with the manufacture of such substances for use in medicine or dietetics. If patents are granted for methods of manufacturing such substances for other uses, they consider that manufacture for use in medicine should be exempted from the operation of such patents. They would urge amendment of the law to secure these ends.

3. The members of the conference are not convinced that the granting of patents for the synthetic preparation of new substances, for use in therapeutics, has been similarly detrimental. They further appreciate the possibility that a one-sided and purely national abolition of such patents might unjustly penalise commercial enterprise in this country. They would gladly see a mechanism established by which patents for inventions in the medical field, other than those specified in (2), could be dedicated to the use of the public in this country, while affording the requisite priority of action in other countries.

4. Until some such dedicatory system is established, the members of the conference think that the special position held by medical men in the community renders it undesirable that they should apply for patents in the medical field.

EFFECT OF THE RESOLUTIONS.

The first of these resolutions is a general expression of the unanimous opinion of the conference that the patenting of discovery and invention in the medical field, whether by medical men or others, is not in the public interest. The second and third suggest a practical means of dealing with a situation which can only be effectively modified by legislative action, while the fourth defines the line of action which, in the view of the conference, should and can, in existing circumstances, be taken by members of the profession.

The salient feature of the practical propositions contained in the second and third resolutions is the distinction made between animal compounds as defined in the second, and synthetic chemical products dealt with in the third. The difference suggested in the treatment of the two groups is admittedly a compromise, but it was felt by the conference to be a wise and practicable one. It was clear that the strongest grounds for complaint against the actual working of the existing patent law in the medical field had been given by patents for the substances described as serums, toxins, antigens, and the like. There was overwhelming evidence that patenting under this head had in practice proved a hindrance to progress rather than that stimulus to research and invention which it is supposed to afford. Even those concerned on the commercial side with substances used in therapeutics and practical dietetics agree in general that the application of such patents has been detrimental to British commerce. Accordingly it was suggested that no further patents should be granted in this group.

On the other hand, it was admitted that in the case of the production of new substances by the processes of synthetic chemistry a stronger case could be made out for the protection of British manufacture by patents similar to those granted in other countries from which rival products were forthcoming. Indeed, while practical experience had shown that for the substances covered by Resolution 2, patents had been an unmitigated nuisance, there was some ground for the view that the progress of synthetic chemistry in Germany had been successfully fostered by patent law. It was therefore suggested that, in connexion with this second group of products some provision might well be made for the dedication of patents to the use of the public in this country without affecting the attainment of the requisite priority of action in other countries. It was realised that to ask the Government to abolish all further patents over the whole of the medical field without reference to the practice in other countries would be useless, however desirable the end in view might be in the opinion of the members of the conference and those whom they represented; but it was felt that the adoption of the distinction explained above should make it possible to obtain some immediate improvement in the existing position.

The memorandum issued by the Medical Research Council[1] was quoted at the conference as having drawn a similar distinction between the substances referred to in Resolutions 2 and 3, and as making out a very effective case for the differentiation now proposed. In support of the distinction, a member of the conference emphasised the point that the knowledge of the processes upon which the introduction of forthcoming products depended was at present so fluid that the only kind of patent which could be obtained under the first head was likely to block further research in that direction. When a process of synthesis having to do with a substance of known constitution was concerned, however, the danger was much less. Blocking patents had been taken out in synthetic chemistry, but to nothing like the same extent.

THE NEXT STEP.

The conference discussed what steps could be taken to make these resolutions effective, and immediate action was deemed desirable, in view of the stage already reached in the progress of the Patents and

[1] See THE LANCET, March 12th, p. 575.

Designs Bill through Parliament. For this reason it was agreed that, although the resolutions of the conference are subject to endorsement by the Council of the British Medical Association, they should, as the opinion of the conference itself, be communicated in the meantime to the Ministry of Health, the Board of Trade, and the medical Members of Parliament. They will be submitted, in addition, to the bodies which sent representatives to the conference.

THE BRITISH SPAS: AN APPRECIATION.

STATEMENT No. 3, issued by the British Health Resorts Association,[1] says that although there are many waters in the British Islands (Dr. Rutty in 1757 described 131 sources of medicinal water in Ireland alone), there are at present only 12 actual spas—that is to say, places where natural medicinal springs are installed in establishments for medical use. The British spas are distinguished from those of the Continent by their invigorating and tonic quality, imparted by the northern island climate. The summer is considerably cooler than at most continental resorts, excepting only those in the Alps. With this temperate quality and the long northern days is combined a freshness and almost incessant movement of the air. The medical value of the northern moorlands of moderate altitude is comparable to that of the Swiss mountains. The influence of the British climate and of latitude profoundly modifies the action of water-drinking and baths, and the reaction of invalids under treatment in fresh and tonic airs is different from that observed in enclosed and sultry valleys. Two main types of spa treatment are practised in England:

(1) The *catabolic type*, which aims at increasing elimination from the body by the bowels, kidneys, and skin, aided by appropriate diet and exercise. This is especially suitable for patients, whatever the form of their particular disorder, who are sedentary, of good appetite, well-nourished and florid, often showing signs of congestion and high blood pressure (*hyperpiesia*).

(2) The *anabolic type* of treatment, which aims at increasing and improving the nutrition of the body by tonic waters, baths, and regimen. This, again, is especially desirable for chilly and ailing or convalescent persons, usually of poor appetite, thin and ill-nourished, pale, with cold and inactive skin and poor circulation (*poikilothermia*).

THERAPEUTIC INDICATIONS.

The medical uses of the British spas are, naturally, not so highly differentiated as in countries where there are many varieties of waters. Fortunately, both these great categories of chronic maladies—the congestive and the subnormal—are well treated at all the British spas. In the north, Strathpeffer, Buxton, and Harrogate offer a frankly tonic summer treatment. Woodhall Spa, to the east, is more sheltered. At the Welsh spas, and at Leamington, Cheltenham, and Droitwich in the Midlands, the tonic and sedative influences are combined. Bath is the warmest and most sedative of British spas, and eminently suited for treatment in winter.

The 12 British spas present an interesting variety.

The hot springs of BATH, rising at 120° F., were used by the Celts and Romans, and there was a Bath hospital in the sixth century. Their diuretic and solvent effects are enhanced by baths of various kinds. Deep pools of thermal water, besides douches and whirlpools, are used for the relief of pain and stiffness in many chronic rheumatic affections, and for the treatment of wasted and paralysed limbs, as well as injuries. The warm winter climate reinforces the effect of the baths.

BRIDGE OF ALLAN, in the Lowlands of Scotland, has been recently rediscovered as a spa. The calcium salt waters are used for rheumatism and by inhalations for catarrh, and the mild and equable climate makes it a resort for all seasons.

BUXTON, in Derbyshire, stands 1000 feet above sea-level, and, like Bath, was known to the Romans. The warm blue waters, from which the name of "The Blue Spa" is derived, have been used for the rheumatic poor since the sixteenth century, and the fine hospital is a lasting monument to their value. Buxton is a natural "Centre of Convalescence."

Both CHELTENHAM and LEAMINGTON, with TUNBRIDGE WELLS (no longer a spa) were fashionable centres for water-drinking 100 years ago. The first, with its uncommon alkaline waters, is especially useful in intestinal and liver disorders. Both are useful salines, in sheltered localities, suitable for spa treatment at all seasons and for delicate and elderly persons and those returned from tropical countries.

The brines of DROITWICH—*Salinæ* of the Romans—are ten times as strong as sea water, and are used externally for many forms of rheumatism, re-educational movements in the bath now forming part of the cure.

HARROGATE, on a bracing Yorkshire moor, has a remarkable outcrop of sulphur, saline, and iron springs, first described in 1626, and has had its excellent spa hospital for more than a century. The spa claims with some justice to counteract the effects of a sedentary life, and especially the disorders of the digestion and liver.

LLANDRINDOD WELLS, in central Wales, has also a pleasant moorland climate, and its "anti-catarrhal" salt waters are of curative value for catarrhs of the stomach and bowels, as well as a tonic in anæmia and debility. The neighbouring LLANWRTYD, too little known, possesses an abundant source of sulphuretted water.

TREFRIW, in Carnarvonshire, is a little-known spa, possessed of a nearly unique acid-iron water. Given in spoonfuls and externally in compresses and baths, it is a powerful stimulant in certain forms of arthritis and anæmia.

STRATHPEFFER SPA, in the Highlands, is the northernmost of the British stations, and has some of the strongest sulphur waters in Europe, as well as an iron spring. The tonic-sedative air is very favourable for repose and recuperation.

WOODHALL SPA, in Lincolnshire, has a dry and bracing air. The salt waters, with a little bromine and iodine, are diluted for drinking and are used externally for rheumatism and diseases of women, and by inhalation for respiratory catarrh.

Altogether the British spas comprise most of the waters which should be of service in preventing ill-health and in relieving the disorders associated with a northern climate.

SPECIALISATION.

No one country contains every natural provision for health. There are no arsenical waters in England, and children and others for whom such waters are considered desirable must be directed elsewhere. Alkaline waters, which are greatly resorted to in other countries, are little used in England.

The British spas have not specialised to the same extent as those on the Continent. For instance, treatment by diuresis (flushing of the kidneys) has not been differentiated and systematised, although there are many available waters which have diuretic properties, such as those of MALVERN, ILKLEY, MATLOCK, BRACEBOROUGH SPA. There is no health resort that is mainly or exclusively concerned with cardio-vascular cases with the various procedures recommended for these too prevalent conditions. Treatment in the home country is especially desirable for cases of that kind. Again, there is no spa chiefly devoted to asthma and respiratory affections, although useful methods are now employed at more than one of the British spas. In other countries a spa technique has been developed for these ailments, in which varied modes of treatment are combined—a system of inhalations being used simultaneously with waters and general and local baths.

Many classes of health seekers may confidently expect to benefit by British waters and baths. These

[1] The statement is signed on behalf of the Medical Advisory Committee of the Association by Dr. R. H. Elliot, Sir Thomas Horder, Dr. Robert Hutchison, Dr. E. P. Poulton, Sir Humphry Rolleston, Sir William Willcox, Dr. R. A. Young, Dr. R. Fortescue Fox (chairman), and Dr. W. S. C. Copeman (hon. secretary).

include sufferers from chronic rheumatic disorders, gouty manifestations, arterial hypertension, dyspepsia and indigestion in their various forms, congestive or catarrhal, whether in sedentary or convalescent persons, and from nerve exhaustion and anxiety states. In addition to these are the many over-tired people, showing signs of strain and failing health, who need more than a holiday every summer. Adequate and complete treatment is available for all these conditions at the British health resorts.

From the international standpoint, therefore, the spas of Britain take their place as a group of northern stations. They offer a particular type of treatment, which, reinforced by the island climate, is more stimulant and less sedative than spa treatment on the Continent. With this dominant character the different members of the group serve a good variety of medical uses.

HUGHLINGS JACKSON MEMORIAL MEDAL.

PRESENTATION TO SIR CHARLES SHERRINGTON.

ON May 19th, at the annual meeting of the Section of Neurology of the Royal Society of Medicine, Dr. Stanley Barnes, as president of the section, had the pleasant duty of introducing the first recipient of the Hughlings Jackson Memorial Medal. He recalled the foundation and history of the lectureship, the first lecture being given in 1897 by Dr. Hughlings Jackson himself to the old Neurological Society, and subsequent lectures being delivered at irregular intervals by such men as Hitzig, Broadbent, Horsley, Gowers, Head, and Dana. About twenty years ago Tooth had suggested raising a fund to endow the lectureship, but no action was taken and the matter was forgotten. In 1931 Sir Charles Sherrington gave the lecture, and at a dinner given in his honour the same evening Mr. Leslie Paton, then president of the section, proposed that money should be raised to endow a medal and give an honorarium to the lecturer. The proposal had an enthusiastic reception and a satisfactory outcome, and that evening they were in a position to present the first medal and a cheque for 100 guineas to Sir Charles Sherrington. Dr. Barnes noted that among those present was Sir James Crichton-Browne, Dr. Hughlings Jackson's oldest surviving friend, and called on him to say a few words. Sir James spoke of his first meeting with Jackson 70 years ago, of their subsequent association, and of the early papers published by Jackson in the medical Reports of the West Riding Asylum. When he (the speaker) had to leave Yorkshire, these reports under his editorship ceased to be published, and the need for some similar journal led to the foundation of *Brain*, and out of *Brain* grew the Neurological Society, of which Hughlings Jackson was the first president. Sir James Crichton-Browne recalled Jackson less as a great neurologist and physician than as a dear friend. Sir Charles Sherrington had done magnificent work on the lines laid down by Jackson, with advantages for research which Jackson did not possess.

Dr. T. Watts Eden, president of the society, then presented the medal and cheque to Sir Charles Sherrington, and also his diploma as an honorary member of the Section of Neurology. It was appropriate that the work of one of the greatest clinical observers the world had ever seen should be thus commemorated. Sir Charles Sherrington's investigations had disclosed a domain of nerve function which was hardly dreamed of in Hughlings Jackson's time, and the happy association of clinical and experimental work was exemplified on this occasion.

Sir Charles Sherrington, who was received with prolonged applause, expressed his gratitude to the society and to all those at home and abroad who had joined in the inauguration of the medal and had honoured him by this presentation. He spoke of Hughlings Jackson's happiness in being able to combine work in the laboratory with work at the bedside; he, himself, had found it impossible to get far outside the walls of the laboratory, and was all the more appreciative of the fact that they had singled out for this honour one who had been working on a narrow line. The presence of Sir James Crichton-Browne was an added pleasure, inasmuch as he had been a colleague and friend of Hughlings Jackson long years ago.

After Mr. Leslie Paton had presented two replicas in toned silver to Dr. Watts Eden for the Royal Society of Medicine, Dr. Stanley Barnes thanked the treasurer of the fund, Dr. Wilfred Harris, in the name of the Section of Neurology for his work for the fund.

Dr. Harris, in reply, said that when he went up to Cambridge as an undergraduate in 1888, Sir James Crichton-Browne had recently been elected president of the Neurological Society, third in succession from Hughlings Jackson. At Cambridge, under Michael Foster, he found that the third volume of Foster's Physiology on the Central Nervous System, a monumental work, was written entirely by Sherrington. As the students were supposed to know the whole of this for the tripos examinations, he thought of Sherrington in those days perhaps with somewhat mixed feelings. Five years later, after leaving Cambridge, he became Dr. Hughlings Jackson's house physician, and he had always looked on Jackson's and Sherrington's names as meaning more for him in neurology than any others. It would readily be understood, therefore, how intensely interesting it had been for him to aid in gilding the inscriptions of two names indelibly written in the annals of the Section of Neurology.

IMMUNISATION AGAINST DIPHTHERIA.

RESOLUTIONS OF THE LONDON CONFERENCE.

AT a conference of 21 experts under the chairmanship of Dr. Th. Madsen, held in London in June, 1931, reports were presented of studies in immunisation against diphtheria carried out on a uniform plan in nine European countries. On the basis of the information submitted to it the conference formulated certain practical conclusions designed to help health administrations in the campaign against diphtheria. The text of these resolutions, which have received the approval of the Health Committee of the League of Nations, is given in the first number of the new *Quarterly Bulletin* as follows:—

1. Immunisation against diphtheria, when carried out under suitable conditions and with efficient prophylactics, effects a large reduction in the diphtheria mortality- and morbidity-rates among children thus treated. This is proved by studies carried out under strictly comparable conditions, such as those observed during the recent inquiries.

2. The reactions sometimes observed after the injection of diphtheria prophylactics give no cause for alarm and

should not interfere with the campaign for the immunisation of children, including tuberculous children, nor should they prevent the choice of the most active prophylactics.

3. The conclusion appears justified that, in spite of a few exceptional cases, the efficacy of immunisation may be deduced from the change of the Schick reaction from positive to negative.

4. Taking as a basis the figures concerning the morbidity, the percentage of Schick reaction rendered negative after the injection of the immunising agent, and a certain number of titrations of antitoxin in the blood of persons immunised, it may be concluded that formol toxoid (anatoxin) is the most efficient of those antigens which have been the subject of our comparative study—i.e., mixtures of toxin, antitoxin, and formol toxoid (anatoxin), and should be recommended for the present.

5. The clinical observations submitted to the conference indicate that, so far as can be determined up to the present, the immunising power of formol toxoid (anatoxin) in man appears to be in relation with the antigenic value of the prophylactic as measured by the flocculation method.

6. The method of administration recommended is by subcutaneous injection. When this is not possible, the prophylactic may be applied to the nasal mucous membrane. Our experience with the cutaneous method has not been favourable.

7. Immunisation should be carried out by means of three injections. It is hoped that, in the future, the use of a more active prophylactic will make it possible to immunise with two or perhaps even one injection.

8. The intervals recommended between injections are three weeks between the first and second injection, and at least two weeks between the second and third.

9. It is unnecessary to carry out the Schick reaction before immunisation. It is, however, desirable to use the Schick reaction before and after immunisation in a certain proportion of subjects in order to determine the value of the method employed.

10. It is recommended that immunisation against diphtheria should be carried out not later than during the pre-school period, after the end of the first year of life. If the children have not been immunised during the pre-school period, they should be immunised, if possible, during the first year of school attendance.

11. Charitable organisations and administrations receiving children in homes (holiday camps, preventoria,[1] sanatoria, &c.) are advised to require, from both children and staff, a diphtheria immunisation certificate on admission or a certificate attesting that the Schick reaction was negative.

12. Immunisation is recommended for medical, nursing, and domestic staff in hospitals, homes, dispensaries, sanatoria, schools, &c.

13. Immunisation is to be recommended even during epidemics in the case of children who have been in contact with patients, as there is so far no evidence on record as to the existence of a negative phase.

14. In the opinion of the experts, diphtheria immunisation should form the subject of active public education on the part of the health administrations of the different countries in order to bring home to everyone the advantages of this method of protection in safeguarding the public health.

These resolutions, it is stated in an introductory paragraph, being the logical outcome of lengthy investigations carried out concurrently in several countries, represent an international consensus of opinion, and constitute a doctrine which, in view of the qualifications of its authors, may be regarded as established.

MEDICINE AND THE LAW.

Highgate Hospital Inquiry.

ON April 21st the Central Public Health Committee (No. 1) of the London County Council had its attention drawn to an article in *John Bull* reflecting upon the admission and treatment of a patient in Highgate Hospital. The article contained complaints of the treatment of the patient at his reception, delay in the attendance of a hospital doctor, persecution of the patient with questions about his personal history, wrong diagnosis, acute suffering of the patient from thirst and want of nourishment, unsuitable diet, failure to notify the patient's wife of her husband's serious condition, and the fact that a letter was sent to him after his death. The article seems to have set these allegations forward as a grave indictment of the general administration of municipal hospitals.

The Committee appointed a subcommittee to examine the charges. The widow had previously called at the County Hall and made complaints; she then said she would attend the inquiry, but, although invited to do so, she did not in fact attend. The subcommittee made a thorough investigation of the allegations and expressed the opinion that the facts elicited afford no justification whatever for the reflections made in the published article on the organisation and administration of municipal hospitals. While space does not permit detailed analysis of the separate complaints and the relevant findings, the suggestion of wrong diagnosis may perhaps be cited as a sample.

The article said the patient was unquestionably suffering from acute pneumonia, and that the family doctor's order for his reception was signed to that effect with an added query as to the possibility of tuberculosis; that the hospital doctor ordered the patient, though certified to be suffering from pneumonia, to be taken to the tuberculosis ward; and that the widow protested and insisted on a post-mortem examination, whereupon the cause of death was certified to be pneumonia. The subcommittee find that the family doctor's certificate said the patient was suffering from broncho-pneumonia (tuberculous) and that there was no query. On this and his past history he was placed in the tuberculosis ward. His history was that he was certified suffering from tuberculosis of the lungs in 1927 and was then treated at Colindale Hospital, Hendon; he suffered from hæmoptysis in 1931 and was treated at St. Joseph's Hospice, Hackney; during 1928, 1929, 1930, and 1931 he was under the care of the tuberculosis officer at St. Pancras dispensary. The medical superintendent at Highgate described an interview with the widow at which she had said she thought his illness was probably not tuberculosis; she had had him insured lately and would not be able to get the money if tuberculosis appeared on the certificate. The post-mortem inquiry did not disclose tuberculosis as a cause of death. The primary cause of death was lobar pneumonia, the secondary cause was cardiac syncope. Part of the allegation as to unsuitable diet was that the patient was offered boiled mutton instead of jelly and custard. The subcommittee says that he was given lemon water, beef tea and milk, and a little custard and jelly; boiled mutton was not included in the hospital diet on any of the days in question.

The Committee is to be congratulated on its prompt and proper action and the hospital management on its complete vindication. If the truth receives the same publicity as the charges, perhaps no great harm will have been done.

Sale of Izal by Grocer: Unsuccessful Proceedings.

One of the points reported upon in 1930 by the Departmental Committee on the Poisons and Pharmacy Acts was the inclusion in Part II. of the present Schedule of Poisons of "carbolic acid and liquid preparations of carbolic acid and its homologues containing more than 3 per cent. of these substances." The Committee observed that the interests of public health demanded the use of effective disinfectants, but that the average purchaser for domestic and

[1] i.e., institutions for delicate children.

kindred purposes, instead of going to a chemist's shop and buying a really effective article which (because it is a poison) he cannot get elsewhere, inclines to buy from a grocer or general dealer an inferior article bearing perhaps the same or a similar name, not a "poison," but one which as a disinfectant is inefficient in fact. This was a point which had been strongly urged on the Committee by the Society of Medical Officers of Health. A wider issue, of course, is the loss of the public safeguard which was broken down when under the Act of 1908 the sale of poisons to the public ceased to be solely in the hands of persons qualified in skill and knowledge. It was a defect of the Committee's recommendations that they would apparently have multiplied the unqualified sellers of the raw material of murders and suicides by allowing any person to be a licensed seller who was not positively of bad character or unsound mind.

The Pharmaceutical Society, to whose honourable record of service the Committee paid tribute, does its best to enforce laws which are none too clear. It takes action (under Section 15 of the Pharmacy Act, 1868) against anyone who, not being a duly registered pharmaceutical chemist, or chemist or druggist, sells a poison to which the Acts apply. The Society thus took proceedings lately against a Hounslow grocer for selling the disinfectant Izal, a liquid preparation of phenol and a homologue of carbolic acid. Such homologues are included in Part II. of the list of statutory poisons in the terms already quoted; but there is an express exception in favour of "preparations for use as sheep wash or for any other purpose in connexion with agriculture or horticulture, contained in a closed vessel distinctly labelled with the word 'Poisonous,' the name and address of the seller, and a notice of the special purposes for which the preparations are intended." There was no doubt that Izal came within the description of carbolic acid homologues containing more than 3 per cent.; there was no doubt that, as sold, it was contained in a closed vessel properly labelled. The sole question in the Hounslow case was whether it was a preparation for use as sheep wash or for an agricultural or horticultural purpose. There was evidence that the Sheffield manufacturers packed Izal in bottles in a carton described as "Pharmacists' Pack" when the fluid was to be sold by chemists for domestic use; they packed it in something called the "Universal Pack" when it was to be sold by grocers for agricultural or horticultural purposes. In the latter case the label satisfied the statute by saying "for use in agriculture and horticulture: for general purposes add to a pail of water two tablespoonfuls of Izal." The Brentford county court judge held that the preparation was duly sold with a notice that it was for use in agriculture or horticulture, and that specific instances of its use as such were given; consequently the preparation came within the statutory exception, and the Acts had not been broken. For the Pharmaceutical Society it was argued that the court must look at the real object of the sale; if the sale was in fact for a purpose which was neither agricultural nor horticultural, the labelling ought not to protect the unqualified seller. The King's Bench Division, however, has rejected this argument and has refused to look at the exact purpose for which the bottle was sold. If the label was a mere sham, there might be an offence against the Acts; but there was no evidence of any such fraud in the present case. The High Court upheld the county court, and thus the Pharmaceutical Society, seeking to do its duty under the Acts, is foiled.

ANTIGEN-BASED TESTS IN THE DIAGNOSIS OF NEMATODE INFECTIONS.

EARLY last year we commented on work by N. Hamilton Fairley and F. Jasudasan [1] which brought out the value of complement fixation in the diagnosis of schistosomiasis in animal and man. In this infection the complement-fixation reaction to antigen is of the group type and the source of antigen advised by these writers was snail liver heavily infected with the cercaria of *Schistosoma spindalis*. A heavy infection is necessary so that the test material may contain as much cercaria and as little liver as possible. In this connexion it is worth noting that it is indeed possible, should necessity arise, to obtain cercariæ almost free from liver by grinding and washing this and collecting the live cercariæ which escape from it, that in this way an almost pure cercarial antigen can be obtained from a lightly infected liver, and that the precipitin reactions produced by it are reported as being stronger, clearer, and more specific than are those from whole liver.[2] The obtaining of an almost pure antigen from a worm in a stage of development in which it is embedded in the host's tissues was anticipated by Ströbel [3] in 1911 when he freed trichinæ from infected meat by digestion with pepsin and hydrochloric acid. Using this principle Bachman [4] was able to obtain the living larvæ of *Trichinella spiralis* so free from other matter that the fluid containing them gave no biuret reaction.

THREE TYPES OF TEST.

In nematode infections three of the antigen-based tests repay consideration—namely, precipitin, intradermal, and complement fixation.

Precipitin reactions were secured by Bachman in trichinosed animals, using the antigen obtained as just described; but precipitins did not appear in the serum of infected rabbits until about 30 days after infection, by which time, as he points out, human cases are either dead or convalescent. Nevertheless, in these particular experiments the antigen was specific in the sense that in course of time every infected animal showed precipitins if it lived long enough, while no control ever did so. In contrast with this positive reaction in the case of a nematode which passes much of its life in tissues are the findings of Coventry for ascaris [5] and Stumberg for hookworms [6]; they could detect no parallelism between infection with these intestinal parasites and precipitin reactions with extracts of the respective adult forms. At present it cannot be said that precipitin reactions interest the practising medical helminthologist.

Intradermal reactions both immediate and delayed, the latter long since associated with Casoni's name in hydatid infection, have application in certain nematode infections. For *Strongyloides stercoralis* Fülleborn [7] has applied by the scratch method an antigen obtained from the dried bodies of the filariform larvæ and has found an immediate reaction in the infected, whereas in the uninfected there is none unless their skin shows a general sensitiveness to foreign protein. From the clinical standpoint he finds an interesting parallel between the itching perianal swellings which occur in those infected by this parasite and the papule which follows the application of an infective larva to the skin; and he suggests that the former are due to penetration of the skin by larvæ which have developed to infectivity in microscopic portions of fæces sheltered in the depths of perianal folds, and that

this supposition goes far towards explaining the persistent character of this infection. Examination of sections of the wall of the small intestine suggests that the habitat of the nemidia of this parasite is not limited to the lumen of the gut, but that it invades the lymph-bathed tissue of the mucosa itself. For parasites of the lumen of the gut (hookworm, ascaris, and trichuris) Coventry and Taliaferro [8] have found no relationship between such infections and immediate intradermal reactions to antigens made from the bodies of the respective parasites. Yet, for delayed reactions, Coventry [5] noted their occurrence in laboratory animals infected with or sensitised to ascaris, but not in controls; while the possibility of producing this reaction persisted for months, it did not run parallel to the precipitin reaction. That however it is not evidence of present, and probably not even of past, ascaris infection was indicated by Ransom, Harrison, and Cough,[9] whose experience led them to the conclusion that at least in laboratory workers it was an occupational condition, capable of being produced in those whose occupation brought them into contact with the parasite but who were not necessarily infected by it.

These findings suggest that antigen-based tests for nematodes will mainly prove effective in those infections in which the parasite lives in plasma or lymph, and there is evidence for this conclusion in work done during the last two years on the filaria group. Taliaferro and Hoffman [10] used as an antigen an extract in normal saline of dried and powdered *Dirofilaria immitis*, a filaria which lives in the heart cavities of the dog, and concerned themselves essentially with the immediate intradermal reaction after injection of the equivalent of 0·000125 g. of dried worm. This is a tenth of the amount of antigen, expressed as snail's liver, injected in the same strength as was used by Fairley and Williams [11] when they instituted the intradermal method for the detection of schistosome infection, the change apparently being made because the American workers considered that it appeared to be the concentration rather than the quantity of antigen which determined the severity of the reaction. This was held to be positive if the resulting wheal were 5 mm. in diameter or if one of any size possessed outrunners or pseudopodia, provided always that concomitant injections of snail's liver or of saline showed no such characters. As thus defined a positive result was obtained in 22 of 23 persons who at the time had micro-filariæ in their blood, and in two of 19 who had never been in an endemic area. They added, regarding delayed reactions, that these followed in five of the 23 who were certainly infected, in two of 39 who were possibly infected, and in none of 43 who were probably or certainly uninfected.

The matter has been carried a step further by Hamilton Fairley [12] who used both intradermal and complement-fixation tests for infections with members of the filaria group. By one of those not infrequent coincidences he, too, selected *D. immitis* to furnish his antigen, though his work was conceived and started in complete independence and without knowledge of that of Taliaferro and Hoffman. The antigen was a 2 per cent. alcoholic extract. In all of seven cases actively infected with loa, showing that is recent Calabar swellings and a high eosinophilia, complement fixation was positive in dilution of from 1 in 100 to 1 in 800. It was also positive in four persons believed to be infected with *F. bancrofti*—one, that is to say, had a clear history of filarial hydrocele and the three others had lived for many years in endemic areas. Negative reactions were obtained in 59 controls suffering from various diseases and parasitised with various other worms; they indeed included two cases of hydatid of the liver and two of infection with *Schistosoma hæmatobium* which gave strong reactions respectively with hydatid scolex and cercaria. Of these 59 cases three had evidence of old infection with *F. bancrofti* in that dead worms were excised from two of them, while the third gave a history of lymphangitis with micro-filariæ in the blood a year earlier; but none of them showed microfilariæ at the time of examination. In addition one from whom an onchocerca nodule had been removed showed a weak positive reaction.

VALUE OF THE REACTIONS.

Apart from some carried through with negative results by Fairley and Glen Liston [13] in 1924 in guinea-worm infection, complement-fixation tests do not seem hitherto to have been applied to lymph-dwelling nematodes, but the positive findings now reported in loa cases where living worms were certainly, and in *F. bancrofti* cases where they were probably, present, taken in conjunction with the negative ones in which they were probably not present, must lead to coördinated serological and pathological study of a test which promises to be a valuable aid to diagnosis.

This conclusion is confirmed by the results of Hamilton Fairley's intradermal tests in which, at least latterly, the amount of antigen used was 0·00025 g. In all the seven loa cases there was an immediate reaction, as there was too in six of the seven cases known or suspected to harbour *F. bancrofti*. The exception had gastric carcinoma, positive complement fixation in a dilution of 1 in 800, a heavy eosinophilia, had lived for long in an endemic area, but had no detected evidences of filarial infection. In these tests a positive reaction was one in which the immediate wheal, including pseudopods, measured not less than 2·3 cm. and in which control injections were negative. Delayed reactions added themselves to the immediate ones in all the loa and in several of the *F. bancrofti* infections; and the resemblance of these deep blubbery swellings to Calabar swellings was a matter of comment by the loa patients who were thoroughly familiar with these latter in their own persons. In character they differ completely from the initial wheal, but the delay in their appearance need not be great; for instance in a case reported by A. C. Chandler, G. Milliken, and Schuhardt [14] Calabar swellings appeared within 20 minutes of an operation in which a loa was removed from the conjunctiva and was probably injured in the process, and in Fairley's cases this reaction sometimes appeared within an hour of intradermal injection. In the onchocerca case both immediate and delayed reactions were elicited. Fairley points out that the complement-fixation and intradermal tests supplement one another, since the first detects circulating antibody and affords an index to more active infection; while the latter detects the intracellular antibody which may persist long after circulating antibody and even the parasites themselves have disappeared, and does so whether the antigen remains limited to the dermis as in the immediate wheal, or diffuses into the subcutaneous tissue as in the delayed reaction. He points out too that since microfilariæ are not demonstrable for years after infection with *Loa loa* has taken place while Calabar swellings appear earlier, intradermal injection may allow of yet earlier detection, while it provides an entirely new mode of approach

to the study of infection with *F. bancrofti*. Taken in conjunction with the anatomical studies which are being made by O'Connor,[15] the prospects of further and early additions to knowledge of filariasis seem more promising than has for long been the case.

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IRELAND.

(FROM OUR OWN CORRESPONDENT.)

THE IRISH FREE STATE BUDGET AND MEDICAL SUPPLIES.

IT is a fortnight since the Minister for Finance opened his Budget, and it is only now that the implications of several of the new customs duties are unfolding themselves. For example, the real meaning of the "package tax" was not grasped at first. It was known that a tax of 2*d*. was imposed on every closed packet or bottle ready for sale which was imported to the country. It was not realised, however, that the tax was to be levied on every single packet or bottle in each parcel. Take the case of a box containing, say, 12 ampoules of some drug put up ready for use. The tax on such an article will be 2*s*.; that is to say, each ampoule has to bear a tax of 2*d*. This will be a serious matter, not only for the practitioner, but for the general hospital. The use of ampoules has increased enormously in recent years, and will increase more in the future as intravenous and hyperdermic methods of medication are developed. Even a small hospital will find its drug bill much swollen by the duty now imposed. The duty is all the more irritating as it does not tend to protect any Irish industry, and the Irish trade is hardly considerable enough to induce any of the big manufacturing firms to establish packing-stations in the Irish Free State.

THE PROBLEM OF THE DUBLIN HOSPITALS.

Mr. John Good, an experienced hospital governor and a member of the Dáil, speaking recently at the annual meeting of the Adelaide Hospital, reverted to the question of the amalgamation of the Dublin hospitals. He recalled that some years ago a movement was set on foot to amalgamate the hospitals, a project which would have made for efficiency and economy. The scheme was dropped because the considerable sum required to finance it was not then available. Now large sums of money were available, but there did not seem to be the same interest in amalgamation as formerly. He hoped that the matter would again receive the attention of the various hospitals.

The question is, indeed, urgent. The desirability of amalgamation is not only obvious but admitted. The money is, or will be in another year or two, available. But there is every likelihood of its being spent in undertakings which will act as a direct obstacle to amalgamation. Every new wing built, every addition to or improvement made in existing buildings, will not merely spend the money which ought to be devoted to amalgamation, but will act as a deterrent. The hospitals are, in fact, "digging themselves in" in their present positions, and tending to give a new lease of life to a system which is outworn and should be obsolete.

THE ASSOCIATION OF PHYSICIANS.

The annual meeting of the Association of Physicians of Great Britain and Ireland was held in Dublin on May 13th and 14th. The Association had not met in Dublin since 1909. The president for the year is Prof. T. G. Moorhead, of Dublin. About one hundred members were present, and it is stated that the meeting was pleasantly successful on both the scientific and the social sides.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

THE HOME OF THE COLLEGE OF SURGEONS.

AT the first annual general meeting of the Royal Australasian College of Surgeons held in Canberra, it was suggested that Canberra, being the home of the Commonwealth, should be the home of the College. The Government of the Commonwealth of Australia made a grant of land on condition that it should be accepted within a certain time by the College. It soon became evident that a headquarters at Canberra, although it might have had certain advantages, had many practical objections to it. The matter was further considered, and at the annual general meeting held in Sydney in 1931, it was unanimously agreed that the building of the College should be in Melbourne. This decision was a tribute to the fact that the lion's share of the work of establishing the College, maintaining it and bringing it up to its present high standard, had been done by Melbourne men.

By arrangement with the Government of Victoria, the College has now secured the site of the old Melbourne High School in Spring-street, Melbourne, for which a lease has been granted for a term of years at a nominal rental, on condition that a suitable building shall be erected on the site within a specified time. It is proposed to demolish the greater part of the present building, but retain the architectural features facing Albert-street, and to erect additions which will permit of accommodation for lecture rooms, library, laboratories, museum, and administrative offices. The area of the site is approximately two acres. A condition of the lease provides that, apart from the land required for the building of the College, the whole of the area shall be laid out in gardens, and be available to the public. It is understood that the erection of the building will shortly be undertaken.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

"ECONOMY."

THE bad financial situation of the Austrian exchequer has had unexpected repercussions on the conditions of the staff of the University of Vienna. At present, several important directorships of institutes and clinics are unfilled. These include the

first clinic of medical pathology and materia medica, formerly held by Prof. Wenckebach. Leading physicians in Germany who have been offered this appointment have all refused, owing to the unsatisfactory salary and limitations on the conduct of private practice, and several Austrian physicians were approached. They too refused nomination, and the officials of the Ministry of Education, in whose hands the appointment rests, have resolved to save money by continuing the interim arrangement whereby the clinic is in charge of the late first assistant. The same sequence of events occurred in connexion with the first surgical clinic made vacant by the death of Prof. Eiselsberg. The man who would be his most natural successor, Prof. Clairmont, of Zürich, would not be welcomed by all parties to the appointment, and it is likely that in time some less prominent surgeon from one of our provincial clinics will be preferred. Meanwhile, the first assistant—a young surgeon—manages the clinic. Students are thus flocking to the second surgical clinic under Prof. Denk. His lecture theatre holds only 250 students, but 450 have entered their names to attend his lectures and try to squeeze into the crowded hall. The first clinic for diseases of women and obstetrics has remained vacant for quite a long time. Prof. Halban, an international authority, was nominated and nearly appointed. But antisemitic influences were strong enough to prevent his final appointment at the very last moment. Here again a young assistant manages the clinic at a considerable saving of expenditure. The institute for experimental pathology now in abeyance for several years will not be revived although there are several men fully qualified to be its director. The Central Röntgen Institute has become vacant through the death of Prof. Holzknecht. Instead of offering this appointment to a leading authority, who would organise a proper X ray school, and perhaps continue the world-wide attraction which this institute provided during Holzknecht's life, the officials are looking for a good "specialist" who will do the work for less remuneration and who will not be pensionable. Finally, the chairs of anatomy and normal histology are waiting for their occupants. The longer these posts remain vacant or are filled by men of little distinction, the more money is saved, but the students suffer, and, indeed, the prestige of the university. In medical circles this most unsatisfactory tendency is bitterly resented, and in a memorandum to the Government now in preparation, it will be pointed out that a really prominent teacher or clinician draws so many students and patients to Vienna that his higher salary is more than counterbalanced by the stream of money directed to the city by his work.

ASSASSINATION OF PROF. ALEXANDER.

Prof. Dr. Gustav Alexander, the world-famous otologist, was shot to death in front of his home by a former patient, undoubtedly a maniac. It appears that this famous surgeon had performed a cosmetic operation on the man 27 years ago. The patient had been suffering from depression of the bridge of the nose following syphilis, and desired to be freed from his disfigurement. He was not satisfied with the cosmetic effect of the operation, and as long as 22 years go he attempted to shoot Prof. Alexander. The attempt failed; the man was placed in a lunatic asylum and afterwards discharged. A few days ago he returned to Vienna with the intention of killing the surgeon and this time he succeeded. Prof. Alexander was only 57 years old. Already as a student he devoted his attention to the anatomy of the ear and the labyrinth, and he published at an early age several important papers dealing with the finer anatomy and histology of the inner ear and the cochlea. He became assistant to Pollitzer, then chief of the Otological Clinic of Vienna, and later succeeded Urbantschitsch as chief of the ear department in the Vienna Poliklinik. There he founded the Alexander School of Otology, a sort of Mecca for all surgeons studying otology in Vienna. His researches on the labyrinth of white (Japanese) mice, and of the echidna won him the gold medal of the French Otologic Society in 1904. He investigated also the problems of deaf-mutism, of heredity of pathological ear conditions, statics and equilibrium, and published standard works on various branches of his specialty. Cosmetic surgery of the ear and the auricle was only one of the branches in which he excelled. His death is a serious loss to the Faculty.

DEATH OF PROF. ERWIN LAZAR.

The well-known specialist on psychology of the pathologic child, Prof. Dr. Erwin Lazar, has died after a short illness in his fifty-fifth year. He was the originator of modern methods of dealing with the mentally defective or delinquent child, and was the first to emphasise the influence of environment and education on behaviour, and to show how such children could be made useful members of society. In the Pirquet Clinic for Children he organised a special department for refractory children, and later he took over the supervision of all such departments in Austria in the capacity of consultant. Dr. Lazar's classes on "Heilpaedagogik" (curative education) have become famous, and pupils from all parts of the world have been attending his clinic to learn his system of classification of the mentally or emotionally diseased child.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 14TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 76 (last week 68); scarlet fever, 1558; diphtheria, 691; enteric fever, 36; acute pneumonia (primary or influenzal), 954; puerperal fever, 60; puerperal pyrexia, 115; cerebro-spinal fever, 49; acute poliomyelitis, 5; encephalitis lethargica, 13; continued fever, 2; dysentery, 13; ophthalmia neonatorum, 101. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 17th–18th was as follows: Small-pox, 116 under treatment, 4 under observation (last week 109 and 6 respectively); scarlet fever, 1559; diphtheria, 1315; enteric fever, 6; measles, 2614; whooping-cough, 420; puerperal fever, 15 (plus 5 babies); encephalitis lethargica, 228; poliomyelitis, 3; "other diseases," 84. At St. Margaret's Hospital there were 13 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox or enteric fever, 81 (33) from measles, 4 (0) from scarlet fever, 43 (13) from whooping-cough, 31 (4) from diphtheria, 52 (14) from diarrhœa and enteritis under two years, and 43 (5) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 11 deaths from measles, Leeds 6, Sheffield 3. Six fatal cases of whooping-cough were reported from Liverpool and 3 from Nottingham. Diphtheria accounted for 5 deaths at Manchester, 4 at Liverpool and 3 at Hull.

The number of stillbirths notified during the week was 336 (corresponding to a rate of 46 per 1000 total births), including 55 in London.

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

IN opening the 135th session on May 24th, Sir NORMAN WALKER, the President, spoke with regret of the retirement from the Council of Sir Ashley Mackintosh, Sir Holburt Waring, and Sir Hilton Young. He welcomed Sir John Marnoch, Mr. F. K. Steward, and Mr. Douglas Hacking, M.P., who were taking their places, and he congratulated Sir Henry Dale upon the knighthood conferred on him since the last meeting.

OLD PROBLEMS AND NEW.

Examination of minutes and presidential addresses showed, said Sir Norman, that "not a few of the problems with which our predecessors wrestled 50 years ago are remarkably like those with which we are confronted to-day." In 1887, after the passing of the 1886 Act, Sir Henry Acland had said:—

When the Council originally met in 1858 there was a general feeling that the first thing to be considered was the mode of improving the general education of the student.

"We cannot to-day speak of that sentiment in the past tense," said Sir Norman, "when in the very near future we shall be again considering the education of the student before he officially begins the study of medicine. Again, here is what Sir Henry said in 1887 about preventive medicine:—

A new significance attaches now to the old words "salus populi, suprema lex." Any system of medicine which should ignore duty to the masses as well as to the individual is now no medicine at all; yet most here can remember the time when "polypharmacy" practised sometimes in simplicity, often for the sake of lucre, was not uncommon. Some of us can recall the day when the prevention of disease was considered almost outside the province of an orthodox medical man.

"And another of our problems this week is the consideration of the question whether we are doing all we can and ought in the teaching of that subject. So it must always be. Circumstances change, and if we do not adapt medical education to the changes medical education and the public will suffer."

RECIPROCAL RELATIONS.

"In July of last year the Privy Council transmitted for the observations of the Council a copy of the text of a Bill to modify the law concerning medical study and practice in France. The observations of the Executive Committee were to the effect that it was already far easier for a Frenchman to become a qualified practitioner in this country than it was for a foreigner to attain similar rights in France. But the present tendency of every country to raise its boundary walls and to narrow the gates in them has prevailed, and the Bill has passed the Chamber, is now before the Senate, and is likely to become an Act. Those now practising in France are exempted from its provisions, but those who in future desire to practise in France will be required to pass the baccalauréats in, among other subjects, Latin and Greek, all the subjects in the medical curriculum, and to become naturalised French citizens.

"The difficulties which arose over the very large numbers of American citizens seeking entry to the medical schools of this country have, thanks to the coöperation of responsible authorities in the United States, almost disappeared."

INDIA.

"I wish I had better news to give about medical progress in India. When a political situation is disturbed, plain useful things like Medicine are apt to be pushed on one side. I had hoped that a peaceful settlement of the question of Indian medical standards and qualifications would have been reached before other trouble arose, and often, in the light of my Indian experience, think wistfully of how nearly that was achieved. The Draft Bill to establish a Medical Council for British India was, at the instance of the India Office, considered in November last by the Executive Committee, who passed the following resolution:—

The Executive Committee have considered the Draft Bill and the accompanying communications from the India Office, and recognise with satisfaction that it represents a well-directed effort to establish by statute a body which by its constitution and functions is designed to maintain a satisfactory minimum standard of medical qualification for admission to the proposed Indian Register. The Executive Committee are of opinion that, if carried into law, the Bill will conduce to the improvement of Indian medical education, and serve the best interests, both internal and external, of Indian medicine in general.

"Pressure of other business prevented the Government from finding time for the discussion of the Bill at the Delhi Session of the Legislative Assembly, now closed. It is only fair to recall that in most countries it takes time to get a medical Act through Parliament. It took about 50 years of discussion and negotiation to secure the passing of our Act of 1858."

EXAMINATIONS AND REPORTS.

"The present cycle of inspection of the final examinations in medicine, surgery, and midwifery, under the 1886 Act will be completed in June. It will have occupied a little over two years . . . It will be the Council's duty to consider whether in the light of the reports any modification in the curriculum and examinations should be recommended to the licensing bodies. In November, 1920, in connexion with the last cycle of inspection, the Council authorised the Education Committee to set up, under the auspices of the three branch councils, subcommittees to report on the four sections of the medical curriculum. On these subcommittees there sat as coöpted members experts on the different subjects concerned, and useful reports were submitted by all. This method had the merit of enlisting the interest of the medical schools and licensing bodies in the proposals made, and much useful constructive criticism was forthcoming."

"The Education and Examination Committees will jointly present reports on two matters of urgent public importance (maternal mortality and the methods of teaching preventive medicine) which have been under consideration for some time."

"The British Pharmacopœia 1932 is approaching completion, and is expected to be ready for official publication on Sept. 30th."

"The Executive Committee received at their meeting in February a communication from the Medical Research Council concerning patent law. The attitude of the medical profession in this country has always been averse to the patenting of any remedy which might be directly useful to the public, and the patenting of insulin, in the public interest, by the University of Toronto has been generally approved because it was felt that the control of that remedy was essential, and that it was in safe hands. Now, however, a new question has arisen in respect of the patenting of processes used in medical research, and this it is represented is hindering the advance of medicine. This is obviously not in the public interest, and the members of this Council as well as nearly all the members of the profession of this country will,

there is no doubt, be in wholehearted sympathy with the proposals which the Medical Research Council has made for solving the difficulty which has arisen.

"Nearly all my predecessors have commented on the responsibilities which rest on the shoulders of the President during the intervals between the sessions. There seems to be an unending stream of problems to settle. I think what has distressed me most is the number of complaints about irregular certificates. I do not propose to discuss the subject to-day. I will just say this: If every practitioner would read carefully the precise terms of every document to which he is asked to put his signature, there would be fewer complaints."

PANEL AND CONTRACT PRACTICE

Varicose Veins.

THE sclerosing treatment of varicose veins has given rise to much talk among insurance committees and panel committees, and in the Ministry of Health. Practitioners, in the first instance, went to some trouble to learn the technique and its pitfalls. They used it in all suitable cases, whether private or panel, and the question arose whether this treatment came within the scope of ordinary panel practice. Certain practitioners claimed a fee and forwarded the appropriate form (GP 45) to their insurance committee. Under the regulations the committee has to seek the advice of the local medical committee—which usually has the same personnel as the local panel committee—on these forms. Generally speaking, local medical committees were agreed that the injection treatment was a new responsibility requiring experience, and such that a medical man of ordinary skill and standing, who trained quite efficiently possibly some years ago, could not reasonably be expected to undertake; therefore those who do undertake it, having proved their ability to do so, should be allowed a fee for their services. Insurance committees usually accept the views of the local medical committees, but here a difference of opinion arose. It was said: "This is a very simple operation. House surgeons at the hospitals, and even dressers, are doing it daily, and why therefore should the panel practitioner charge a fee for this triviality?" While it is quite true that house surgeons perform this simple operation, the responsibility is the hospital's for which he is working; moreover, he is working under instructions of a senior surgeon, and it is thought to be entirely another matter to expect the practitioner to undertake this work on his own responsibility when he may not have had the opportunity of even seeing it done.

When local medical committees and insurance committees differ, an appeal goes to the Ministry of Health, which thereupon appoints referees—a barrister and two practitioners. A decision was given by referees in a Manchester case in 1929, when it was held that this treatment is within the range of service. The matter came before the Insurance Acts Committee, and it was decided not to recognise the Manchester decision as case law, but as affecting that case only. Since that time patients have been charged for treatment regularly. Forms GP 45 have been filled in and forwarded to insurance committees, some of whom have passed them as outside the scope, while others—notably those of London, Leicester, and Kent—have refused to agree with their local medical committees. No further referees were appointed to hear these cases, and for over two years the cases accumulated. The Ministry then asked the local medical committees to accept as binding the decision of referees they would appoint to try a few simple non-complicated cases. Kent and Leicester agreed to this course, and after the hearing the decision was again that the treatment comes within the scope of the Act. With the decision came the suggestion that all old cases outstanding for decision should be treated as outside the scope, but that after the date of the decision new cases were to be inside the scope. The London local medical committee, however, would not agree to this; they are against the principle of case law, holding that each case should be dealt with on its merits, and they still pass on each GP 45 form for varicose vein injections to the insurance committee as a case outside the range of service.

The Ministry have now issued a report, dated April 26th, by the same referees who reported on Leicester and Kent in July, 1931, on some 12 cases in the London area; and, as was to be expected, they find all the cases come within the scope of the Act. They quote as confirming the correctness of this view that the Manchester referees in 1929 and those in Scotland and Northern Ireland have reached similar conclusions.

If the Insurance Acts Committee decide to accept this report as binding case law it will mean that further duties are imposed upon the panel practitioner, and this will have to be borne in mind when the next capitation fee is considered. The aim of the authorities has always been to expect panel practitioners to give the same standard of treatment to panel and private patients of the same class. Private patients willingly pay special fees for this sort of work, and the effect of this decision will probably be that many practitioners will advise their panel patients to go to hospital for this treatment—as they would if they were allowed to charge but the patient could not afford the fee. Thus it seems likely to discourage individual enterprise and increase hospital congestion.

Practitioner and King's College Hospital Scheme.

The mutual benefit association, now being promoted by King's College Hospital, is somewhat similar to the British Provident Association, but not part of it. Practitioners living in the area of London served by this hospital are disturbed by the particulars of its rules and by the way the scheme has been advertised. Hospitals were, it is felt, not intended to enter into direct competition with practitioners. They were started for the treatment gratuitously of patients unable to pay their own medical man, but have gradually encroached on the practitioners' domain amongst artisans and better-class working people, the work however of the consultant surgeon or physician remaining gratuitous. In the new scheme this consultant class appears to gain financially at the expense of the practitioners. No income limit is placed on membership. A patient with (say) £1500 a year, and suffering from some simple medical or surgical ailment, will be able to say in effect: I will have 21 days in King's and be treated at reduced fees by a member of the staff, because I pay £1 1s. a year to that hospital. His own doctor cannot prevent him and might not even be asked about it.

A deputation of local medical men, after interviewing recently some of the committee of management,

secured an addition to the rules to run as follows: "10. Subscribers are normally admitted by arrangement with the subscriber's usual medical adviser," and a practitioner is also to be placed on the committee of management as consultative member. "The scheme is however still regarded as unsatisfactory," a correspondent writes, "and as the scheme is advertised and the consultant staff benefit financially through its advertisement, the matter may come under the jurisdiction of the General Medical Council. This point will, of course, be considered by those members of the staff who propose to work for reduced fees for any subscriber to the scheme, no matter what income he may have. If not vetoed in this way practitioners might decide to cross off their lists of specialist consultants those members of the staff who propose to work the scheme, and who, by so doing, are in effect becoming glorified general practitioners under the aegis of the Mutual Benefit Association. There is another point. If the scheme became really popular the hospital would be unable to provide beds for subscribers in sufficient numbers when required, and unlike the insurance service there would be no Government regulations to see that the hospital authority carried out its obligations."

Panel Committee Matters.—Psychotherapy.

At a meeting of the Panel Committee for London on Tuesday last, Dr. Cardale reported that the Insurance Acts Committee, amongst other important business, had been considering the question of anæsthetic service under the Act. London had suggested that anæsthetics should be treated as general service, not subject to special fees, and that, until this was agreed to, the local distribution scheme should be amended to 1*s*. for each anæsthetic. Proposals from some areas were that partners and assistants should not be recognised for special anæsthetic fees and in others it was suggested that no fees should be paid in cottage hospitals with an open staff. It was eventually decided by rather a narrow majority that special fees for anæsthetics should be abolished. The matter will have to come before the next panel conference for confirmation.

The audited accounts for the year ended 31st Dec., 1931, showed costs of just over £4300 for the year, an increase of some £800 on 1930, mainly due to the appointment of an organising and assistant medical secretary. "We are of opinion," the auditors state, "that the expenditure involved is amply justified in view of the closer relationship which has been established between the committee and its constituents through the activities of this member of the staff."

The pharmacy subcommittee heard an appeal by a practitioner under Article 4 (1) of the medical benefit regulations against the decision of the insurance committee that 11 prescriptions for soap (one tablet) do not form part of medical benefit. It appeared that castile soap was required for enemata after an operation for colostomy. The committee, while deprecating the indefinite method of prescribing, came to the conclusion that in this case, by reason of the fact that soap had a definite therapeutic value when administered as an enema, it did form part of medical benefit.

There was some discussion about the fees charged by certain specialists (£36 15*s*.) for giving evidence on the subject of varicose vein injections before the Ministry referees. It was decided to pay these fees without comment, but the question of cost in such cases for the future was referred to a subcommittee, who will report on what is thought to be the proper procedure.

Considerable time was taken in considering a claim under the special form G.P. 45 for permission to charge an insured person for treatment by psychotherapy for (1) violent pains in the throat (2) anxiety neurosis. Several members of the committee deprecated these claims by a general practitioner, although in this case he satisfied the regulations as to his ability to perform this service. It would, they thought, open the door to grave abuse. Most general practitioners of any standing or capability treated their panel cases by suggestion as well as by other activities without charge, and if these cases were passed for payment as being outside the scope of the Act—they were the first that had ever been applied for in London—every patient who imagined he had some neurotic condition ("such as feeling faint at the thought of work") would be treated by his panel doctor, after attending a few lectures at some clinic, by psythotherapy. On the other side it was pointed out that psychotherapy was a highly skilled modern form of treatment and that the committee should not put obstacles in the way of progress. If this item was not passed for payment, as its opponents wished, it was part of the general practitioner service; but the opposition had said it was humbug and they could not have it both ways. Eventually by a fairly large majority these services were passed as being outside the scope of the Act.

Out-patients.

A committee of King Edward's Hospital Fund for London is considering the position of out-patients at the London hospitals. It was reported to the London Panel Committee, at its meeting in April, that the impression gained by a member who had met this investigating committee was that it was thought that hospitals were doing too much work for panel practitioners in out-patient departments. The main suggestion of this investigating committee as to why so many insured patients attend an out-patient department is:—

1. The treatment given by insurance doctors may not be successful.
2. The patient has a difficulty in changing his doctor whom he may dislike.
3. His doctor may not be available when wanted.
4. His doctor is often so busy that he cannot attend his patients.

The London Panel Committee, after considering the points raised, decided to set up a section to go into the whole matter, and to ask the investigating committee to receive a deputation which would be able to rebut statements derogatory to the panel service. This section has not yet reported. There may be practitioners who delight to send a case to hospital, but they are in a minority. Most insurance practitioners wish to obtain a second opinion on some difficult point when they send a case to the out-patient department; their trouble is that the hospitals are then apt to keep the case, supply the medicine they think fit, and tell the patient to come up in fourteen days time, with the result that the insurance practitioner loses sight and interest. It is admitted, of course, that some treatments and investigations can only be done by or in a hospital, but when that is carried out and finished, the case should be returned with a report to the practitioner sending it up in the first instance. Clerical work is a practical difficulty in this scheme, for it is quite hard enough work to take an afternoon at out-patients without having to write letters on each at the end of it; but it is felt that this difficulty could be overcome by suitable organisation, with benefit to surgeon or physician, out-patient department, insurance doctor, and last but not least to the patient himself.

CORRESPONDENCE

A CONFERENCE ON RADIUM.

To the Editor of THE LANCET.

SIR,—As a member of the conference held on March 4th, at the College of Physicians to consider the question of the radium bomb, I feel that certain passages in the report of that conference which was sent to you and appears in your present issue are likely to lead to misunderstanding.

In a memorandum placed before the conference it was suggested that we, as a country, are far behind the continent both in the equipment of our institutions and in the skill of our personnel. I was fortunately able from my first-hand knowledge of the work which is being done both in this country and abroad to show that this was not the case, and I understood that I had succeeded in convincing the other members of the conference. In the necessarily brief report of the conference this does not, however, appear.

We were, however, all agreed that workers in this field have not so far been able to obtain the facilities accorded in continental countries, where the resources of the State are more directly available for the service of medicine. It will be generally agreed that a fully equipped radium institute, on a really adequate scale, in the centre of London, and supported by the laboratories, physical and pathological, and the X ray equipment which are common practice on the continent, would be of great value and would enable us to coördinate and to show to better advantage the admirable work which is already being done by individuals. I am, Sir, yours faithfully,

Harley-street, W., May 21st, 1932. H. S. SOUTTAR.

REDUCTION OF BENEFITS OF INSURED WOMEN.

To the Editor of THE LANCET.

SIR,—I was surprised that Dr. Mabel Ramsay should approach the question of the sickness of insured women from the point of view that the present insurance scheme must be accepted as it stands, and without considering whether some reorganisation of the scheme is possible so as to go further in the direction of pooling the resources for the benefit of all.

State insurance involves pooling resources for the benefit of all, and therefore any legislation which reduces the benefits payable to one section of the insured population because of the high level of claims arising from that section is contrary to its basic principle. This principle has been applied in national unemployment insurance in the interests of men, where a considerable proportion of the sums paid in by and on behalf of women are used to subsidise the men's benefits. Women have always had a lower percentage of unemployment than men. For example, in 1922, 14 per cent. of the male insured population were drawing benefit and only 7 per cent. of the women. In January, 1932, 25 per cent. of the men were drawing benefit and only 15 per cent. of the women. At no stage in the intervening ten years did the claims of the women reach the level of the claims of the men. No suggestion has been put forward at any stage that the benefits payable to men under the Unemployment Insurance Acts should be related to the percentage of claims received. It would be most unjust that this principle of pooling resources should be applied when it is in the interests of men but that it should not be applied when it is to be in the interests of women.

Assuming for the moment that it is reasonable to depart from this principle, I cannot accept the suggestion that it is women alone who should be the victims. Women are not the only section of the insured population who constitute a special burden on the funds. The miners, who are a large proportion of the male insured population, have even higher sickness and disablement claims, as the following figures, taken from the report of the Government Actuary on the third valuation of approved societies (pp. 29 and 30), show :—

General Level of Claims.

	Men.	Women.	Miners.
Sickness ..	.. 92%	104%	138%
Disablement	.. 90%	138%	154%

Welsh insured persons, as a whole, also are a heavy charge on the fund. I am not suggesting that the benefits of miners or Welshmen should be reduced. The cases are cited to illustrate the point that women are not the only expensive section of the population and to strengthen the contention that differentiation is contrary to the principle of State insurance. Women should not be penalised any more than miners or Welshmen.

The report of the Government Actuary declares that the predominant feature of the third valuation is "the magnitude of the aggregate surplus and the substantial additional benefits enuring to a large proportion of the population." £20,000,000 has been released for the payment of additional benefits, and this is to be shared among 88 per cent. of the men insured and 38 per cent. of the insured women. That is to say, the scheme on its present contributions is going to pay additional benefits to a large majority of the insured population. Since this is so, there ought to be some readjustment of the distribution of the sum available, in order to prevent the reduction of the present statutory benefits payable to insured women. It is most inappropriate to suggest where the scheme has such surpluses that the women are to be victimised.

The majority report of the Royal Commission on National Health Insurance recommended a partial pooling of future surpluses in the following words (p. 120):

> "These considerations . . . would incline us to view with favour the introduction of a measure of partial equalisation of benefits so limited in its operation as to preserve the incentives to sound and economical administration . . . but at the same time going considerably beyond the restricted scheme of pooling which was introduced, so far as the societies actually in deficiency are concerned, by the establishment of the central fund."

Besides, there is nothing to prevent the extension of the machinery of the central fund which exists to help societies which have deficiencies. An increased levy on every insured person for the benefit of this fund, with any necessary additional powers to those who administer it, might afford a possible method of dealing with the difficulty. Once the principle is accepted, as I submit it ought to be, that the pooling of risks should be a pooling which does not exclude insured women, it is not beyond the power of the Government Actuary to devise a method of giving effect to the above suggestions, or otherwise to reorganise the finances of the scheme without sacrificing the women contributors.

It has to be remembered that already existing

legislation is such as to contribute to the specially high rates of sickness among women. Poverty is perhaps the greatest cause of sickness, and the poverty of women is encouraged by their low wages. Then low wages are encouraged by the trade boards which fix by law minimum rates of wages for women generally a little more than half those fixed for men. Then low wages are also encouraged by the practice of the Government and by many local authorities of depriving women of their work when they marry.

The lower sickness and unemployment benefits payable to women are a further cause of her greater sickness. When the sickness of women is encouraged in so many ways by present legislation, it is surely most unjust that proposals should be adopted thus further depressing the health of women.

I am, Sir, yours faithfully,

Harley-street, W., May 24th, 1932. JANE WALKER.

NEMBUTAL AND CHLORAL IN CHILDBIRTH.

To the Editor of THE LANCET.

SIR,—We are writing to confirm the good results obtained by the use of nembutal and chloral in childbirth by Drs. O'Sullivan and Craner, as reported in their excellent paper published in THE LANCET of Jan. 16th. We are in agreement with their conclusions, and think that owing to the infrequency of troublesome restlessness when these drugs are used as compared with Van Hoosen's intensive hyoscine treatment [1 2] or Brammer's pernocton method [3] it is the most reliable means for obtaining complete amnesia in labour at present available to the practitioner who cannot spend many hours continuously with his patient. The other two methods mentioned more constantly produce a perfect twilight sleep, but need much more careful watching.

The following is a brief record of the first 59 cases treated by us at the Leeds Maternity Hospital. We are indebted to the three senior members of the honorary staff for allowing us to use the method on their patients.

Complete amnesia. 23 cases (39 per cent.).

Shortest	interval between start of treatment and birth	45 mins.
Longest		9¼ hours.
Average		3 hours 21 mins.

Terminal chloroform was given, for about 10 minutes as a rule, in 19 of these cases.

Fair results. 22 cases (37 per cent.).

Shortest	interval between start of treatment and birth	25 mins.
Longest		15 hours.
Average		4¾ „

These patients had partial amnesia but remembered birth or induction of anæsthesia. The average interval between starting treatment and birth is high because four of the cases lasted over eight hours: in each of these four cases one or more of the repeat doses was not given at the right time or was omitted. Terminal chloroform was given in 14 of these cases.

Poor results. 14 cases (24 per cent.).

Shortest	interval between start of treatment and birth	30 mins.
Longest		3¾ hours.
Average		1 hour 56 mins.

These patients obtained little or no relief. Terminal chloroform was given in 10 of the cases.

Our results have improved, no doubt as a result of practice, and are likely to improve further. Eight of the last 13 patients in this series had complete amnesia—i.e., 62 per cent. as compared with 39 per cent. in the whole series. Three main causes of the unsatisfactory results in the fair and poor cases stand out:—

(1) In five cases treatment was started within 45 minutes of delivery. We think that this is about the minimum time for the development of amnesia.

(2) In nine cases the first repeat dose or a subsequent one was omitted. It is difficult to impress on nurses the importance of giving repeat doses when due, even when birth appears to be imminent.

(3) In 12 cases the terminal chloroform was omitted. We feel that the general anæsthetic is of great help in securing a perfect result, especially in the shorter cases.

It is important not to start treatment until pains are regular and strong. Gauss's rule of waiting till pains recur every five minutes and last 20 seconds is sound.

All the babies were born in good condition. The forceps was only used in one case (there were 43 primiparæ). The method of giving chloral in sweet lemonade advised by O'Sullivan and Craner is very satisfactory. Only three patients vomited after it. Fifteen of the patients had somewhat excessive loss, and received injections of ergot and pituitary extract. Only one patient gave rise to any anxiety, and she recovered after receiving intravenous gum saline. The rule in the hospital is that sisters give ergot and pituitary extract at their discretion: it is certainly given unnecessarily on occasion: the house surgeon is only called if the patient's general condition is affected.

It is to be hoped that this method will be given an extended trial in general practice. It is, as its authors claim, safe and easily carried out, and they deserve congratulation for having evolved it and brought it to the notice of the profession.

We are, Sir, yours faithfully,

ANDREW M. CLAYE,
DAVID W. CURRIE.

Leeds, May 21st, 1932.

[1] Jennings, D. R.: Brit. Med. Jour., 1929, ii., 801.
[2] Claye, A. M.: Ibid., 1931, ii., 12.
[3] Brammer, H.: Schmerz, Narkose, Anæsthesie, 1931, iii., 399.

A NEW PITUITARY SYNDROME.

To the Editor of THE LANCET.

SIR,—I have read with interest your leading article (p. 1102) under this heading. The cases seem to coincide with those described in 1921 by Achard and Thiers under the title of the Diabetes of Bearded Women (*Bull. Acad. Med.*, lxxvi., p. 53), and of which I have reported instances in *American Medicine* for 1928 and in the *St. Bartholomew's Hospital Reports* for 1930 (lxiii., p. 53). But the condition also occurs in young men, though it is less likely to be recognised as the overgrowth of hair is not so abnormal. In one of my male cases the overgrowth of the adrenal cortex was clearly seen at operation, and also in one of the female cases. But I should agree that the basophilic adenoma in the pituitary is the primary lesion. I believe that Dr. Parkes Weber's case was the first in which the basophilic character of the adenoma was described.

I am, Sir, yours faithfully,

W. LANGDON BROWN.

Cavendish-square, W., May 20th, 1932.

To the Editor of THE LANCET.

SIR,—Your leading article last week prompts us to point out that, purely on the syndrome which Cushing has elaborated from an analysis of the 12 cases which he collected from the literature since 1912,

we have been enabled to recognise another example of this disorder.

The patient, whose clinical history we have discussed in detail in a paper to be published in the forthcoming issue of the *Guy's Hospital Reports*, died in February, 1931, without a diagnosis having been made either during life or as the result of the autopsy. On reading Cushing's paper (*Bulletin*, Johns Hopkins Hospital, March, 1932), our attention was recalled to this case, and we were fortunate enough, owing to the kindness of Prof. R. Donaldson, to gain access to the autopsy material. On cutting sections of the pituitary we found a basophil adenoma, about the size of a pin's head, lying in the front of the anterior lobe. This tumour was too small to deform the pituitary or to produce pressure symptoms or X ray evidence of pituitary enlargement.

In all essential details this case so exactly corresponds with the symptom-complex described by Cushing, that we have entitled our account of it, which is now in the press, "A Case of Cushing's Syndrome." Dr. Parkes Weber, who originally recorded one of the 12 cases referred to by Cushing has also suggested, in the last issue of the *British Medical Journal*, that "Cushing's syndrome" would be a convenient label for the disorder.

We are particularly interested in your comment on the apparently contradictory symptoms of sexual hypo-function in connexion with this disorder. To the basophil granular cell the function of secretion of the sex-maturing hormone, the Prolan A and B of Zondek, has been ascribed. On the analogy of acromegaly as a manifestation of an adenoma of the acidophil cells, one might expect increased activity of the sexual organs to be a prominent feature of the basophilic adenoma. Investigations of various pituitary rumours have been made by one of us. On the principle of the Aschheim-Zondek reaction for pregnancy, urine obtained from cases of pituitary disease has been injected into test animals, and luteinisation of the ovary has been caused by the urine of every case of acromegaly examined by this method. No such reaction has been obtained with urine from patients with other pituitary disorders, which include cases of Fröhlich's syndrome as well as pituitary tumours producing mainly pressure effects. Only one case of pituitary basophilism has been examined in this way, a case under the care of Cushing himself, and it gave a negative Aschheim-Zondek reaction. Sexual disturbances are prominent in acromegaly, and increased sexual activity is frequently one of the first symptoms, though later impotence and amenorrhœa are the rule.

These findings are suggestive of the connexion of the acidophil rather than the basophil cell with the regulation of the sexual rhythm, and to some extent, serve to indicate the value of the further recognition and investigation of Cushing's syndrome as a possible means of determining the function of the basophil cells of the anterior lobe of the pituitary.

We are, Sir, yours faithfully,

P. M. F. BISHOP,
H. G. CLOSE.

Guy's Hospital, S.E., May 23rd, 1932.

NIETZSCHE'S PHILOSOPHY.

To the Editor of THE LANCET.

SIR,—I beg to thank you for your kind comment upon my new pocket edition of Nietzsche's "Thus Spake Zarathustra" (Allen and Unwin), and I hope, with your reviewer, that "it may find many readers in the medical profession." Nietzsche indeed relied for his recognition upon our profession and its sober art, for he had an inkling that his own confrères would look askance for a long time still upon a thinker who, instead of an imaginary "soul," again drew men's attention back to their bodies. "Thus Spake Zarathustra" contains a special chapter against those "uplifting" philosophers who wish to lead mankind into celestial heights and away from this earth and their bodies. It bears the title "The Despisers of the Body," and it begins as follows: "To the despisers of the body will I speak my word. I wish them neither to learn afresh, nor teach anew, but only to bid farewell to their own bodies—and thus be dumb."

I am, Sir, yours faithfully,

OSCAR LEVY, M.D. (Freiburg), L.R.C.P. (Lond.), M.R.C.S. (Eng.).
Editor of the authorised English translation of Nietzsche's works.

Wiesbaden, May 23rd, 1932.

CHEAPNESS AT ALL EVENTS.

To the Editor of THE LANCET.

SIR,—"Panic in the district." So runs the newspaper headline concerning an appointment of "matron-superintendent" to a mental defective colony shortly to be started.

The position is an interesting one as illustrating the relationship of local authorities to the Board of Control. The colony in question is to be run by a joint committee of two county and two borough councils. It is to cater at first for 200 patients; adolescents and adults of both sexes are to be accommodated. The buildings are to be an adapted mansion and outbuildings, and a large estate has to be worked and organised.

For the supreme control of this colony the administrative officer, a "matron-superintendent," is offered a salary of £160 a year (resident). The Board of Control is quoted as being entirely satisfied that the post can be adequately filled by such a person, *at this remuneration*. The local committee is therefore content. It is apparently nobody's business to assess the merits of the appointment to consider what qualities of personality and leadership, what psychological and cultural background can be obtained at such a rate of pay. Medical care and assessment are apparently secondary considerations, though the indefinite boundary between lunacy and deficiency is well known and is certain to give rise to difficulties.

The main consideration at every point is "cheapness." No one wants to spend on defectives: when driven to do so let the ultimate minimum be sought. Personnel?—the cheapest. Estate management and equipment?—the least possible. Research?—none.

"Panic in the district" is perhaps an exaggeration, but if it were fact it might be better than the apathy which allows public institutions to be run with so little imagination.

I am, Sir, yours faithfully,

May 18th, 1932. A MEDICAL OBSERVER.

GEORGE EDWIN LOWE HOSPITAL.—An extension to this hospital at Sutton Coldfield, which forms part of the Princess Alice Orphanage (the Birmingham and Midland branch of the National Children's Home), was opened recently by Sir Arthur Steel-Maitland, M.P. The extension, which is the gift of Mrs. Lowe, takes the form of a sick room with an outside staircase providing access for infectious cases without traversing the main hospital building.

OBITUARY

JOHN CLOUGH THRESH, M.D. Vict., D.Sc. Lond., D.P.H., F.I.C.,

LATE M.O.H. FOR THE COUNTY OF ESSEX.

WE regret to announce the death of Dr. Thresh, the well-known sanitarian, which occurred at Chelmsford on May 23rd at the age of 82.

John Clough Thresh, the son of James Thresh, an engineer who worked in Peru, was born at Wakefield in 1850, and was educated privately and at Owens College, Manchester. He elected to make pharmaceutical chemistry his special subject, and graduated at the University of London in science, obtaining the D.Sc. in 1884. He later resolved on the study of medicine, and in 1889 took the M.B., Ch.B. Vict., proceeding to the M.D. in 1896, when he was awarded the gold medal for a thesis. He had already, in 1892, obtained the D.P.H. Camb. He remained for a period in Manchester where he was engaged in analytical work, at which time also he wrote a short text-book, entitled "Physics, Experimental and Mathematical," and investigated the claims of Buxton as a health resort by analysing the thermal springs. He also made an instructive report on excessive mortality in certain of the Manchester districts.

DR. THRESH.

Photograph by Elliott & Fry.

With his varied training and experience, and exceptional knowledge of chemistry, he was attracted to the public health service, became an early pioneer in establishing the importance of environmental hygiene, and attracted considerable attention by the thoroughness of his work. He was appointed the first county medical officer of health for Essex, and occupied that position for 22 years, when he became consulting medical officer, a post which he held until some nine years ago, when ill-health compelled him to resign. His work during his long period of office was of the first order, far-ranging, fruitful, and suggestive. His reports discussed such problems as excessive infantile mortality, the value of isolation hospitals, the housing of the agricultural labourer and working-classes, the preservation of and preservatives in food, and especially water and water-supplies. As a thesis for the degree of M.D. he had submitted an essay on this last subject, for which the University awarded him a special gold medal, and the dissertation proved to be the skeleton of a volume which he published in 1896. In this he summarised accepted knowledge in reference to water-supply, with special reference to drinking water. The chemical and bacteriological examination of drinking water was at that period already elaborate, but it was clear that in some cases the results were of questionable value, and public opinion on that matter was strengthened by facts which came out now and again during epidemics of typhoid fever. Water under chemical and bacteriological analysis could not be properly tested and found innocuous, while it was apparently the active agent in the spread of disease. Thresh's book supplied an interpretation of water analyses which was recognised as being logical, and proved to be of high practical value. He also carried out researches into the general purification of water and the effect of water upon health, the reactions of water to lead and copper, and was the inventor of various sterilisation processes; indeed, as a result of his experiments, the excess lime process of water treatment was recently sanctioned by Parliament as an efficient method in the purification of river sources.

His annual report on the Chelmsford and Maldon rural districts, of which he was medical officer at the same time as being the county M.O.H., formed excellent sanitary surveys of an English rural county, and a group of them (1900–1905) were published in book form. Here were discussed building laws in reference to cottage property, housing for the working-classes, prevalence of diphtheria and scarlet fever especially among children, the origin of isolated outbreaks of these scourges, and the cancer mortality of the population. In respect of the last inquiry the conclusions negatived a great many views then popular as to the ætiology, a low mortality from cancer being found to exist under the most diverse physical and sanitary conditions. In 1904 he expanded and added to his previous book on water-supplies and published a work, entitled the Examination of Waters and Water-supplies. This was written in the light of all the recent investigations for the isolation and recognition of the flora of sewage; it considerably modified the conclusions that had been drawn from many bacteriological examinations, for these, it was seen, might be as fallacious as those derived from chemical analysis. He urged further, the importance of making a careful inspection of the source of supply by those actually engaged in the examinations, and made important suggestions for the protection and control of water-supplies out of the results of a long experience. This book stamped Thresh as being one of our first authorities on the whole subject.

Thresh held many important public appointments and discharged many responsibilities. He was at different times honorary secretary to the British Pharmaceutical Congress, examiner in chemistry to the Pharmaceutical Society, lecturer in public health at the London Hospital, and examiner in State medicine at the University of London. He began his sanitary work when the organised study of public health in actual relation to the conditions of rural life was in its infancy, and during his long career many medical officers of health and workers in preventive medicine have benefited by his labours and his actual teaching. His precision of mind and the great skill, industry, and resource with which he faced any problem could not fail to impress deeply his assistants and pupils, and formed a valuable example for their work. These qualities of clear thought and capacity for research, in addition to knowledge and experience, made him in great demand as an expert witness in connexion, principally, with questions relating to water-supply, and his words were always listened to with close attention by any

Parliamentary committee or court before which he appeared. All who have noted the changes in public health administration and in the prevention of disease which have occurred in the last 50 years should deplore the death of one of the great pioneers. For many years he was a constant editorial contributor to THE LANCET, and during his period of active connexion with the paper we derived varied benefits from his counsel.

Dr. Thresh married in 1872, and his wife who predeceased him, was his constant help-mate throughout his long and strenuous public career. His home life was quiet and unostentatious, and only those who knew him well could fully realise his kindly nature or know of his many generous deeds. He was a reserved man, but his intimates knew his warmth of heart. He leaves three daughters to whom all sympathy will go out.

Sir Alexander Houston writes: "There is no country that will not mourn the death of Dr. Thresh, for his disciples and admirers were scattered over the habitable globe. He was a great administrator and a splendid teacher, and his knowledge and its versatility, combined with his patience and capacity for hard work, rendered him one of the most striking figures in the public health service. He will be chiefly remembered for his magnificent work on water-supply, where his influence was profound, embracing every aspect—epidemiological, chemical, bacteriological, and physical. He was equipped on all points with experience personally gained. Much of his work was original, all of it was characterised by meticulous accuracy and attention to detail. Although his fetish was pure water, he was extremely tolerant towards new ideas, and was always in the van in connexion with the trial of any proposed novel departures from old-established custom. The splendid new water-supply to Southend, treated by the excess lime method of purification, is a notable example of his prowess.

"Personally I shall miss him greatly, a friend of 40 years' standing, and his other disciples all over the world will mourn with me the loss of so distinguished a scientist, so estimable a man, and so irreplacable a figure in the world of water-supply."

Dr. JOHN JAMES BOYD, who died at Pretoria on May 3rd, at the age of 63, was a native of Mains, Dundee, and graduated in medicine at Glasgow in 1892. He became assistant medical officer of health for Southampton, and later medical officer for South Shields. Then in 1904 he left this country to take up the appointment of M.O.H. for Pretoria, capital of the Union of South Africa, where he was virtually the creator of the health department. In 1929, having reached the age limit, he left Pretoria for Salisbury, in Southern Rhodesia, where he held the same appointment; but last November he was obliged to relinquish it because of ill-health. During the war Dr. Boyd served in France with the British Expeditionary Force.

Dr. VALENTINE PRESTON PAXON died on May 7th in his twenty-eight year. He was serving as house surgeon at the Queen's Hospital for Children, when he contracted diphtheria, to which he succumbed after just over a week's illness. Educated at Eastbourne College, Paxon began his medical training at Caius College, Cambridge, and went on to St. Thomas's Hospital, qualifying in 1930. Afterwards he was house surgeon at the Royal Berkshire Hospital, Reading, where he gained affection and respect, and where he showed evidence of unusual aptitude for surgery. He took up his appointment at the Queen's Hospital for Children in February, and here again he had won the trust and affection of those with whom he worked.

Dr. WILLIAM HOWARD BLACKBURN, who died on May 11th, at the age of 39, had been medical officer of health for Lowestoft for the past five years. Born at Wallasey, he took the Natural Sciences Tripos at Cambridge in 1914, and qualified in 1916. After serving with a temporary commission in the Navy he returned to graduate in medicine at Cambridge, and obtained the D.P.H. in 1922. He then entered the public health service, in which he seemed likely to go far. A colleague writes of him that he was a man of exceptional merit and personality. "He had an enormous capacity for work, and it was this intense love for his work which unfortunately laid him low, in that his illness commenced with influenza when working at high pressure during an outbreak of diphtheria at Lowestoft. Despite his illness, however, he would not give up work and was in harness until practically the last, earning from the mayor of Lowestoft the tribute that 'it was simply the way he gave himself up to his duty that was the cause of his death.' Personally he was most lovable, ever ready to give a helping hand, and ever cheerful. Everybody who knew him regrets not only the passing of a colleague of the highest type, but of a staunch friend." Dr. Blackburn had held resident appointments at both St. Bartholomew's and St. George's Hospitals. He was formerly deputy M.O.H. for St. Helens.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. (retd.) A. R. Thomas to be Surg. Rear Admiral (retd.).

Surg. Comdr. H. B. Padwick is placed on the retd. list at own request with rank of Surg. Capt.

Surg. Comdr. H. W. Nicholls is placed on the retd. list with rank of Surg. Capt.

Surg. Comdr. W. C. Carson is placed on the retd. list.

The following appointments are notified:

Surg. Comdrs. A. J. Tozer to *Resource*; A. E. P. Cheesman to *Victory*, for Haslar Hospital, for course; W. J. Morris to *Frobisher*, as Fleet Medical Offr.; and R. F. Quenton to *Comus*.

Surg. Lt.-Comdr. (D.) W. E. A. Sampson to *Victory* for R.N. Barracks.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. S. C. Suggit to be Surg. Lt.

Surg. Lt. (D) G. A. O. White to be Surg. Lt.-Comdr. (D).

ROYAL ARMY MEDICAL CORPS.

Maj. F. R. Coppinger to be Lt.-Col.

The undermentioned Lts. (on prob.) are confirmed in their rank: H. C. Morton, A. D. Low, and J. N. Low.

PRIZE WINNERS IN THE R.A.M.C.

The following are names of the prize winners in the Junior Class of Instruction for Officers of the Royal Army Medical Corps and Indian Medical Service at the Royal Army Medical College, at the session which terminated on April 29th last:

Lt. F. A. B. Sheppard (Melbourne University), I.M.S., Herbert Prize (Highest Aggregate) and Fayer Memorial Prize (Pathology); Lt. P. T. L. Day (Guy's Hospital), R.A.M.C., Marshall Webb Prize (Military Medical Administration); Capt. W. Happer (Edinburgh University), I.M.S., Parkes Memorial Prize (Hygiene); Lt. J. M. Low (St. Mary's Hospital), R.A.M.C., De Chaumont Prize (Hygiene); Lt. M. Sendak (St. Mary's Hospital), I.M.S., Ranald Martin Prize (Tropical Medicine); Lt. R. D. Macrae (Aberdeen University), R.A.M.C., Tulloch Memorial Prize (Pathology); Lt. R. I. Reid (Trinity College, Dublin), I.M.S., 1st Montefiore Prize (Military Surgery); Lt. W. A. N. Marrow (Middlesex Hospital), I.M.S., 2nd Montefiore Prize (Military Surgery).

MEDICAL NEWS

University of Oxford.

It is proposed that the honorary degree of D.C.L. shall be conferred on Lord Moynihan on June 1st, before he delivers the Romanes lecture. The subject of the lecture is the Advance of Medicine.

Society of Apothecaries of London.

At recent examinations the following candidates were successful:

MASTERY OF MIDWIFERY.

R. G. Bradford, W. A. Rees, and J. L. M. Wood.

Territorial Army Medical Officers' Association.

The annual meeting and dinner of this association will be held at the Dorchester Hotel on Saturday, May 28th. The meeting will be at 7.30 P.M. and the dinner at 8 P.M. All Territorial Army medical officers (active and retired) are invited to be present.

Demonstrations of Contraceptive Technique.

The Society for Constructive Birth Control and Racial Progress informs us that at 2.30 P.M. on Wednesday, June 1st, demonstrations of contraceptive technique will be given to practitioners and senior medical students. Application for tickets should be made to the hon. secretary of the Society, at 108, Whitfield-street, London, W.1.

British Health Resorts Association.

The fifth conference, for the spas of Mid-Wales, was held at Llandrindod Wells from May 20th–23rd, under the chairmanship of Sir Humphry Rolleston, the delegates being welcomed by Dr. Miller Kerr, president of the local medical society. It was, said Sir Humphry, one bright spot of the financial crisis that it had turned attention to the value of British places, products, and methods of physical treatment. Success depended on the combined action of local authorities and medical men; the latter should ascertain what kinds of patients and ailments were suitable for treatment, and how treatment could be applied to the greatest advantage. The meeting was made the occasion for the presentation of a statement (see p. 1164) in appreciation of the home spas by the medical advisory committee of the Association. In presenting this statement, Dr. Fortescue Fox suggested a survey of the medicinal waters of the country. Dr. W. Langdon Brown, in opening the discussion, said that a striking feature of twentieth century medicine had been a return to the Æsculapian cult; treatment by sunlight, fresh air, baths, the drinking of waters, and psychological exploration. The rise of scientific medicine in the nineteenth century had, curiously enough, been accompanied by a neglect of all these methods and by a concentration on the end-results of disease. Dr. E. A. Goulden (Llandrindod) discussed the rôle of water-drinking in preventive medicine. Dr. George Worthington described the uses of the saline waters of Llandrindod, sometimes in very large doses, as a method of gastro-intestinal lavage, often beneficial in chronic toxæmias due to digestive catarrh. Mr. S. Judd Lewis, D.Sc., explained the new classification of medicinal waters which had already been approved in several European countries (see THE LANCET, 1931, i., 31). He laid emphasis on the significance of elements present in minute quantities, such as iodine, manganese, copper, and boron. At the afternoon session Sir William Willcox recalled the mention of Llandrindod by Pliny; the medical value of this and of the waters at Llanwrtyd and Trefriw justified the movement for their more complete development. Dr. R. Ackerley pointed out that Llandrindod offered, for those who needed them, the two characteristics of a bracing climate—dryness and movement of air. Dr. William Byam held that in general the health resorts should be regarded as places both for cure and convalescence, not omitting the investigation of disease. Among health resorts, the spas should be the specialists, whilst coast resorts might be regarded as general practitioners. The former should not deal with all and sundry, but concentrate on the particular values of the place. Dr. J. W. Patterson (Droitwich) believed there was much wastage in the examination of cases at spas, and advocated the use of an approved questionaire in the interview with rheumatic patients. Prof. Douglas Stanley (Birmingham) pointed out that the spa practitioner had an insufficient grasp of the class of patients cured by the osteopath, which could be equally benefited at the health resorts. There should, he agreed, be a more careful estimation of the type of cases suitable for particular spas. Dr. John Murray (Llandrindod) appealed for facilities at the spas for the accommodation and treatment of industrial workers, who broke down in early adult life with rheumatic and other preventable diseases. On Sunday most of the party were entertained to luncheon by the Mayor of Aberystwith, whilst others visited the sulphuretted springs at Llanwrtyd. The programme concluded with a special performance of the Royal Mountain Ash Welsh Male Choir.

London Hospital Medical College and Dental School.

Prizes and certificates for the current year will be presented by Sir William H. Goschen, chairman of the house committee of the hospital, at 3 P.M. on Friday, June 24th, in the College Library.

Argentine Medical Students in England.

Of nine Argentine students now visiting Great Britain under the leadership of Dr. Carlos Waldorp, three are studying medicine. From June 16th they will make a tour of some of the London hospitals and medical schools, and will also visit Frimley Sanatorium and the Treloar Hospital at Alton.

The New Freemasons' Hospital.

On May 19th, with full Masonic ceremony, the Duke of Connaught, Grand Master of the Grand Lodge of English Freemasons, laid by electric contact the dedication stone of the new Freemasons' Hospital at Ravenscourt Park, Hammersmith. Since only a relatively small number of people could have been placed on the hospital site, the ceremony took place at Olympia, whence, as the Duke of Connaught laid a small duplicate, the actual stone was placed in position by electricity. The Prince of Wales, the Duke of York, Prince George, and Prince Arthur of Connaught were also present, with 8000 other Masons and 3000 ladies. The new hospital, to replace the existing building in Fulham-road, will cost £300,000 and will contain 180 beds; the present one has only 50. It will do much to meet the growing demand for accommodation for Masonic paying patients. It is expected that the new hospital, which stands in between five and six acres of grounds, will be opened in the summer of next year.

Fellowship of Medicine and Post-Graduate Medical Association.

The first of a series of four lecture-demonstrations on Wednesdays at 5 P.M. will be given on June 1st at the Royal Free Hospital by Dame Louise McIlroy. Prof. Arthur J. Hall will give the first of three lectures on Epidemic Encephalitis at 11, Chandos-street, W., at 8.30 P.M., on Thursday, June 2nd. Dr. Knyvett Gordon will give an epidiascope and laboratory demonstration on Splenic Enlargement at 10, Bedford-square, W.C., at 8.30 P.M., on Wednesday, June 1st. Forthcoming all-day courses include: medicine, surgery, and the specialties, at the Prince of Wales's Hospital, Tottenham (June 6th to 18th); gynæcology, at the Chelsea Hospital for Women (June 6th to 18th); diseases of the chest, at the Victoria Park Hospital (June 6th to 18th). A course in diseases of children will be held from June 25th to July 9th at the Children's Clinic and other hospitals, and a week-end course in diseases of the chest will be given on June 25th and 26th at the Brompton Hospital. A fortnight's course in dermatology will be held at the Blackfriars Skin Hospital from June 27th to July 9th, in the afternoons. All the above courses and lectures are open only to members of the Fellowship. The secretary's address is 1, Wimpole-street, W.1.

The Guardianship Society.

This society, whose headquarters are at Brighton, is now in its twentieth year, and continues to extend its work. Its object is the care and supervision of the mentally and physically defective and other special cases by boarding them out in families, assisting them to obtain training and employment suited to their capabilities, visiting them, and taking a friendly interest in their moral and material welfare. It having been decided to end the financial year on March 31st, instead of Sept. 30th, the report submitted at the annual meeting on April 27th covered a period of 18 months. During that period no fewer than 1038 cases were under its care, and the sum disbursed on behalf of patients amounted to £47,009. Only £2046 went in administrative expenses; the hon. secretary, Miss Grace Woodhead, who has held that post since the inception of the society, has, it was stated, "not only worked seven days a week for nothing, but has put a great deal of money into the organisation." The report emphasised the useful work which was done on two training farms in Sussex; described the activities of the clinic for nervous disorders as one of the finest branches of the work, resulting in saving by far the largest proportion of the patients from the distress of becoming certified; and announced that in addition to the three occupation centres at Brighton and one at Hove, there had been added one at Peacehaven and one at Heathfield, while, in addition, workers visited the Mental Hospital at Haywards Heath once a week and held a class among the women patients. At the conclusion of the annual meeting an address was given by Dr. J. R. Rees, deputy director of the Institute of Medical Psychology, London, on the wider aspects of mental disorders.

Mr. Digby Cotes-Preedy, K.C., has been appointed Recorder of Oxford. He qualified as L.S.A. Lond. in 1903, and was house physician at St. George's Hospital before being called to the Bar in 1904.

THE Anglo-French Drug Co., Ltd., announce that on and after June 1st the address of the firm will be 11 and 12, Guilford-street, W.C.1. Telephone: Holborn 6011.

The International Trachoma Prize.

It is announced that this prize, offered by the Royal Hungarian Minister of Public Welfare, is to be divided equally between Dr. Ugo Lumbroso (Tunis) and Dr. J. Taboriski (Palestine). Honourable mention is given to Dr. Cattaneo (Sassari), Dr. P. Olitsky (New York), Drs. Rötth and Kanyó (Budapest), and Dr. C. Trapezontzewa (Moscow). The prize is of the value of 2000 Swiss francs, and the jury of award consist of Mr. A. F. MacCallan (London), Dr. Victor Morax (Paris), Dr. Luigi Maggiore (Bari), Prof. Carl Prausnitz (Breslau), and Prof. Emile de Grósz (Budapest).

Southport Infirmary.

On May 6th Sir Hilton Young, the Minister of Health, opened a new maternity hospital of 32 beds given to the Southport Corporation by Miss Christiana Hartley. The new building is in the grounds of the Southport Infirmary, of which it constitutes an extension, and has cost £25,000. The other extensions of the infirmary, which are now complete, include two additional wards for men and women, and six additional private wards for paying patients. The operating block has been enlarged and modernised, the radiological department has been remodelled, and a nurses' home has been erected. The total cost of the improvements is £67,000.

Hospital Treatment for the Middle Classes.

A meeting was held at King's College Hospital a few days ago to inaugurate a subscription scheme to enable people of the middle classes to obtain hospital treatment without great expenditure. It is a Mutual Benefit Association, on the lines of the Hospital Saving Association, which provides for the poorer classes, and entitles subscribers to 21 days' free treatment in a private ward at the hospital. The rates vary with the number of people concerned, and there is no income limit. The annual subscription for a single person is £1 1*s.*, for a married couple £1 11*s.* 6*d.*, and for a couple with children under 16, £2 2*s.* Subscribers will be required to declare on joining that they are in sound health and that neither they nor their dependents are in need of hospital treatment. The subscriber may make his own arrangement with a member of the consulting staff for the payment of his fees or with the house governor, who is authorised to arrange reduced fees to meet the circumstances

PARLIAMENT

NOTES ON CURRENT TOPICS.

Reassembly of the House of Commons.

THE House of Commons reassembled after the Whitsuntide recess on Monday, May 23rd.

HOUSE OF COMMONS.

MONDAY, MAY 23RD.

Rural Housing.

Mr. THOMAS WILLIAMS asked the Minister of Health what progress had been made with the two million pounds scheme for rural housing initiated by the Ministry in July, 1931.—Mr. E. BROWN (Parliamentary Secretary to the Ministry of Health) replied: 114 Councils have been informed that the committee appointed under the Act of last year are prepared to entertain applications in respect of 1904 houses for the agricultural population, and these councils have for some time been preparing their detailed proposals. Only seven have as yet reached the stage of inviting tenders.

Housing in England and Wales.

Mr. HICKS asked the Minister of Health what was the present estimated shortage of housing accommodation in England and Wales; what was the number of parlour-houses and flats erected in each of the months January, February, and March, 1932; and what action was being taken by the Ministry of Health to urge local authorities to press forward building schemes.—Mr. E. BROWN replied: My right hon. friend regrets that he has no data on which to base such an estimate as is asked for in the first part of the question. Nor is he able to state the total numbers of parlour-houses and flats erected from time to time in England and Wales. The numbers of houses and flats erected with State assistance and completed in the three months mentioned were 6218, 6402, and 5916. As regards the last part of the question I would refer the hon. Member to the answer given to the question put by him on the 12th of this month.

Mr. LUNN asked the Minister of Health how many houses were being built by local authorities in May, 1931, and how many in May, 1932.—Mr. E. BROWN replied: 35,440 dwellings were under construction by local authorities at April 30th, 1931, and 33,493 at April 30th, 1932.

TUESDAY, MAY 24TH.

Insanitary Ships in Port of Manchester.

Mr. LOGAN asked the President of the Board of Trade if his attention had been drawn to the fact that more than 30 per cent. of British ships entering the port of Manchester were found to be insanitary; that the death-rate of British seamen was over 70 per cent in excess of the normal mortality-rate; and what action was being taken to improve the quarters of the crew and the sanitation on British ships.—Mr. RUNCIMAN replied: I am aware that the medical officer of health to the port sanitary authority of Manchester has stated in his report for 1930 that of 1324 British vessels entering the port in that year, 395 have been found on inspection to be insanitary. This number covers defective as well as insanitary vessels, and in many cases the ships had small defects, due to voyage damage or wear and tear, which were remedied before the ships sailed again. The action taken to improve the crew accommodation in British ships is indicated in the statement the President of the Board of Trade circulated in the official report of July 7th last. As regards mortality due to disease arising from the character of the occupation, the special investigation, of which this House was informed on Dec. 24th, 1929, has been completed and the report will be published as soon as possible. It will show that the shipping industry does not compare unfavourably with other industries in this respect.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
WEDNESDAY, June 1st.—SURGERY. Annual Provincial Meeting at the General Infirmary, Leeds.
FRIDAY.—5.30 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) Election of Officers and Council.
FRIDAY.—5 P.M., OPHTHALMOLOGY. Election of Officers and Council. LARYNGOLOGY AND OTOLOGY. Summer Meeting at the Eye and Ear Hospital, Portsmouth. Papers: Mr. G. H. Livingstone: The Nasal Airway of the New-born Child. Dr. G. Scott Williamson: The Genesis of Polypi. Mr. Lionel Colledge: Referred Pain. Discussion: Types of Nasal Inflammation which Produce Inflammatory Conditions of the Ear. (Openers: Mr. H. S. Barwell and Mr. Somerville Hastings.)
SATURDAY.—LARYNGOLOGY AND OTOLOGY. Second day at Portsmouth.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
THURSDAY, June 2nd.—Dr. J. W. McNee: Liver and Spleen—their Clinical and Pathological Associations. (First Croonian lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 30th, to SATURDAY, June 4th.—CLINICAL PATHOLOGY, 10, Bedford-square, W.C. Epidiascope and laboratory demonstration by Dr. Knyvett Gordon on Wed., at 8.30 P.M., on Splenic Enlargement.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Lecture on Epidemic Encephalitis by Prof. Arthur J. Hall, at 8.30 P.M., on Thurs.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Demonstration of Antenatal Treatment by Prof. Dame Louise McIlroy on Wed. at 5 P.M.—(The above courses and lectures are open only to Members of the Fellowship of Medicine.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, May 30th.—10 A.M. to 1 P.M., Gynæcological Wards, Genito-Urinary Operations, Skin Department: Surgical Wards. 2 to 4 P.M., Operations, Surgical Wards, Medical, Surgical, Eye, and Gynæcological Out-patients. 4.15 P.M. (Special Demonstration), Mr. Gibb: Eye Cases.
TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Departments. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients.
WEDNESDAY, June 1st.—10 A.M., to 1 P.M., Children's Medical Out-patients, Medical Wards. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Eye, and Genito-Urinary Out-patients. 4.15 P.M. (Special lecture), Dr. Konstam: Pulmonary Tuberculosis.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—9 A.M. to 1 P.M., Throat, Nose, and Ear Operations, Medical Wards, Children's Medical Out-patients, Surgical Wards, Surgical Out-patients. The Lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

LONDON JEWISH HOSPITAL, Stepney Green, E.
THURSDAY, June 2nd.—4.15 P.M. (Tea at 4 P.M.), Mr. H. S. Souttar: Surgical Applications of Radium.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, May 30th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Leslie Paton: Optic Atrophy.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Parkinsonism.
WEDNESDAY, June 1st.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Senile Cerebellar Syndromes.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Peripheral Neuritis.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, June 1st.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, May 31st.—3.15 P.M., Mr. R. Wade: Some Modern Changes in Anæsthesia.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, June 3rd.—4 P.M., Mr. N. Asherson: Otalgia.

T. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.
WEDNESDAY, June 1st.—3 P.M., Dr. C. Dukes: Tumours of the Lower Urinary Tract.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.
WEDNESDAY, June 1st.—4.30 P.M., Dr. Finzi: Deep Therapy.

Appointments

MOLL, H. H., M.D. Rome, M.R.C.P. Lond., has been appointed Hon. Assistant Physician to the General Infirmary at Leeds.

London County Council: WALMSLEY, N. W., M.D., Ch.B. Liverp., D.P.H., Medical Superintendent, South Western Hospital. PFISTER, Miss HILTA I. C., M.B., Ch.B. Edin., D.P.H., Assistant Medical Officer, Grade I., St. Alfege's Hospital. WILLIAMS, B., F.R.C.S. Edin., M.B., Ch.B. Edin., Assistant Medical Officer, Grade I., Hammersmith Hospital.

Certifying Surgeons under the Factory and Workshop Acts: Hicks, E. B., L.R.C.P., L.R.C.S. Ed., L.R.F.P.S. Glasg. (Easingwold); MacGirr, P., M.B., B.Ch.N.U.I. (Meltham).

Vacancies

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

All Saints' Hospital for Genito-Urinary Diseases, Austral-street, West-square, Southwark, S.E.—Res. H.S. At rate of £100.

Barnsley, Beckett Hospital and Dispensary.—Res. Surg. O. £300.

Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.

Bedford County Hospital.—Second H.S. At rate of £140.

Benenden, Kent National Sanatorium.—Res. Asst. M.O. £300.

Birmingham City Mental Hospital.—Jun. Asst. M.O. £350.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Buxton, Devonshire Hospital.—Asst. H.P. At rate of £150.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Cardiff Royal Infirmary.—Hon. Ophth. Surgeon.

Carlisle, Cumberland Infirmary.—Second H.S. £155.

Carshalton, Queen Mary's Hospital.—Res. Asst. M.O. £350.

Chesterfield and North Derbyshire Hospital.—H.S. £150.

Coventry and Warwickshire Hospital.—Res. Cas. O. £125.

Derby, Derbyshire Royal Infirmary.—H.S. for General Surgery. £150.

Doncaster Royal Infirmary.—H.S. and Cas. H.S. Each at rate of £175.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

Dundee Royal Infirmary.—Hon. Asst. Visiting M.O. for Diseases of the Skin.

Durham County Council Education Department.—Asst. Oculist. £500.

East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.

Hornsey Borough.—Asst. M.O.H., &c. £600.

Ilford, King George Hospital.—H.S. At rate of £100.

Indian State Railways.—District M.O. Rs.650 per mensem.

Infant Hospital, Vincent-square, Westminster.—H.P. At rate of £75.

Ipswich, East Suffolk and Ipswich Hospital.—Res. M.O. £350.

Jerusalem, St. John Ophthalmic Hospital.—H.S.

Lancaster County Mental Hospital.—Asst. M.O. £500.

Liverpool, New Liverpool and Samaritan Hospital for Women, Catherine-street.—H.S. At rate of £100.

Llangwyfan, nr. Denbigh, North Wales Sanatorium.—Jun. Asst. Res. M.O. £250.

L.C.C. Mental Hospital Service.—Asst. M.O. £475.

London Hospital, E.—Asst. Surgeon to Ear, Nose, and Throat Dept.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester, St. Mary's Hospital, Whitworth-street.—H.S. At rate of £50.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. Also H.S. and H.P. Each at rate of £100.

National Hospital, Queen-square, W.C.—Asst. Pathologist. £250.

Newcastle General Hospital.—H.S. At rate of £150.

North-Western Fever Hospital, Lawn-road, Hampstead, N.W.—H.P. At rate of £80.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Oxford, Warneford Mental Hospital.—Second Asst. M.O.

Preston, Royal Infirmary.—Cas. O. £150.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Res. Med. Supt. At rate of £120.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Two Res. Anæsthetists. Each at rate of £100.

Royal Air Force.—Vacancies.

Royal Chest Hospital, City-road, E.C.—Med. Regs. £50.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S.'s, H.P.'s, &c. All at rate of £100. H.P. to Children's Dept. Also Asst. Phys.

St. George-in-the-East Hospital, Raine-street, Wapping, E.—Res. Asst. M.O. £350.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—In-patient Med. Reg. £50.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.

St. Mary's Hospital for Women and Children, Plaistow, E.—Two Hon. Asst. Phys. Also Clin. Asst for Med. Out-Patients' Dept.

St. Stephen's Hospital, Fulham-road, S.W.—Clin. Asst. At rate of £100.

St. Thomas's Hospital, London, S.E.—Two Med. Regs. Also Physician for Skin Dept.

Salford City.—Jun. Asst. for Venereal Diseases Treatment Centre. At rate of £500.

Salford Royal Hospital.—Med. Reg. £250. Also H.P.'s and H.S.'s. Each at rate of £125.

Salisbury General Infirmary.—Two H.S.'s. Each £150.

Sheffield, Jessop Hospital for Women.—Sen. Res. O. At rate of £120.

Shrewsbury, Royal Salop Infirmary.—Cas. O. and Res. Anæsthetist. At rate of £160.

Southampton, Royal South Hants and Southampton Hospital.—Radium Officer. £600.

Stockport Infirmary.—Jun. H.S. £150.

Truro, Royal Cornwall Hospital.—H.S. £170.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Surg. to Ear, Nose, and Throat Dept.

Wales, University of.—Lord Merthyr Research Scholarship, £200, and Mrs. John Nixon Research Scholarship and Ewen Maclean Research Scholarship. Each £150.

Warrington Infirmary and Dispensary.—Jun. H.S. £175.

Warwick, Hertford Hill, King Edward VII. Memorial Sanatorium.—Jun. M.O. At rate of £200.

West London Hospital, Hammersmith-road, W.—H.P. and H.S. Each at rate of £100.

Westminster Hospital Annexe, 66, Fitzjohn's-avenue, Hampstead. Res. M.O. £200.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Willesden General Hospital, N.W.—Clin. Assts. for Out-patient Department.

Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

Births, Marriages, and Deaths

MARRIAGES.

SMITH—SOWTER.—On May 18th, at St. Patrick's Church, Soho, Leslie Muir Smith, M.R.C.S., L.R.C.P., to Kathleen Adela Sowter, daughter of Mr. John Sowter, Becmead, Eastbourne.

STALLARD—PAGE.—On May 21st, at St. Bartholomew's the Great, London, by the bride's father, H. Bristow Stallard, F.R.C.S., to Gwynneth Constance, daughter of Canon and Mrs. F. G. T. Page, of Warwick.

DEATHS.

BENSON.—On May 22nd, Alfred Benson, M.A., M.B., B.Ch. Oxf., of Maida Vale, W.

COX.—On May 20th, at a nursing home, Robert Cox, B.A., M.B., B.Ch., B.A.O., of Calton-avenue, Dulwich, S.E.

FOWLER.—On May 15th, at Cotford House, Thornton Heath, Charles Owen Fowler, M.D., M.R.C.S., J.P., aged 72.

HARRIS.—On May 17th, Percy Reeves Traer Harris, M.R.C.S., F.S.A., of York House, Kensington, aged 70 years.

OWST.—On May 17th, at a nursing home, Arthur Robert Owst, F.R.C.S. Edin., of Puckpool, Ilkley.

SAUNDERS.—On May 18th, at the Beeches, Wales, Sheffield, Matthew Browne Saunders, M.B.

THRESH.—On May 23rd, at Spergula, Chelmsford, John Clough Thresh, M.D., D.Sc., late medical officer of health to the County of Essex, in his 82nd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

BIRTH CONTROL STUDIES.

BIRTH control is a controversial subject on which feelings run high but it is highly desirable that medical men and women should be supplied with accurate information on all its aspects. This is the disarming introduction made by Sir Humphry Rolleston to the Fourth Annual Report of the International Medical Group for the Investigation of Contraception.[1]

Report of the International Medical Group.

The report was published under the auspices of the Birth Control Investigation Committee, which has since become a constituent part of the National Birth Control Association, and aims at being an impartial summary of information bearing on birth control as it becomes available in different countries. According to Dr. Hannah Stone, who supplies a survey of the position in America, a greater change in the temper of the people towards birth control has taken place in the space of the last two years than in the preceding decades. Continued attempts have been made to amend or repeal federal or national and State laws concerning birth control, but many believe that the question will eventually be solved by a nullification of the laws rather than by their change or repeal. An unsuccessful prosecution in 1929 in New York City established the fact in the words of the magistrate, that "If a doctor in good faith believes that the patient is a married woman, and that her health requires prevention of conception, it is no crime to so advise and instruct therein." The prosecution is said to have evoked a vast amount of discussion and helped to crystallise public opinion, not only locally but all over the country. To-day there are over 75 contraceptive services in the States, all under medical supervision. The method still most generally advised at these clinics is a vaginal diaphragm or cervical cap with a contraceptive jelly. For patients with relaxed perineum, cystocele, rectocele, and prolapse, the most inexpensive and simple device is held to be a rubber sponge cut to individual measurements, with the centre scooped out for the cervix. This device has certain disadvantages and improved methods for the application of contraceptive jellies alone are being tried out in these cases. In addition attempts to introduce an effervescent chemical contraceptive in tube form are recorded.

THE GRÄFENBERG RING.

With regard to the Gräfenberg intra-uterine ring no information is available from America, but experiences with it are described by Dr. J. H. Leunbach (Copenhagen), Dr. Helena Wright, and Dr. Norman Haire. Dr. Leunbach's report is not very encouraging. Out of 175 patients to whom silver rings were applied, in 49 cases the ring has had to be removed because of constant bleeding, pain, vaginal discharge, and tenderness; in 35 cases the rings were spontaneously expelled, in most cases several months after the introduction. Only nine of these women themselves noticed that the ring had come out; five women became pregnant because they wrongly believed that the ring was present, while in four additional cases pregnancy occurred although the rings were in the proper place. Less than 50 per cent. of the patients are entirely or even fairly satisfied with the ring after two years' observation, and in some of these menstruation has become somewhat irregular. Dr. Helena Wright reports on a much smaller series of patients, 36 in all (for contraceptive purposes) but her results are equally discouraging. In only nine cases have the rings been successfully retained. In the remainder the ring was ejected at various periods and seven pregnancies resulted. Her conclusion is that the great disadvantage of the method is the uncertainty of the retention of the ring by the fundus, and owing to the extreme irregularity of its behaviour from patient to patient there is no clue as is what is likely to happen in any one case. Dr. Norman Haire reaches much less pessimistic conclusions. With an experience of over 400 cases (the longest period of observation being two years and a quarter) he is convinced of its value in "suitable" cases (undefined), as long as the method is applied only by the gynæcologist. He admits that he has found the ring alone not to be a certain preventive of conception and that in a certain number of cases the ring is expressed by the uterus, but adds that if another ring of different size or different elasticity is chosen one can be found which will stay in. He reports very few cases in which ill-effects were incurred and his general impression of this method is therefore favourable; but as he supports his views with no statistical evidence the results cannot be critically appraised.

SUCCESSES AND FAILURES.

The information about other methods that has become available in Great Britain during the year is very ably summarised by Dr. C. P. Blacker, the editor of the report. He shows that out of a total of 6081 cases advised at eight clinics 5 per cent. resulted in failure—i.e., pregnancy ensued—while 8 per cent. found the method advised unacceptable and abandoned it. It must, however, be noted that these proportions are the *minimum*; they only relate to cases with which the clinics maintained contact without following them up. Mrs. Margaret Lloyd, of the North Kensington Clinic, shows that of 460 "followed-up" cases about 9 per cent. found the method to fail and nearly two-thirds found it unacceptable—i.e., the results are considerably worse amongst the followed-up patients. More or less similar figures are reported from the Cambridge clinic, which instituted a follow-up inquiry, and here a comparison of the figures has led to the conclusion that both as regards proportion of failures and of acceptability the sheath is more satisfactory than the rubber pessary.

Some of the most interesting figures relate to the number of pregnancies that take place after the methods have been abandoned. It is often assumed, consciously or unconsciously, that without prevention 100 per cent. of pregnancies would ensue, and the proportion of successes, for lack of a control group, is really measured on that assumption. If in actual fact a large number of women would not become pregnant without prevention the proportion of successes is obviously overstated. The statistics reported show that actually only half the women who gave up the method advised, subsequently became pregnant, though it must be admitted that no indication is given as to how long they have been "exposed to risk," and information is required on that point.

Blacker includes in this summary an account of J. R. Baker's further studies on chemical spermicides, while Dr. Hertha Riese contributes a study of abortion and suicide in Germany, the thesis being that the practice of abortion is so widespread (an estimate of one million a year is given) that the use of contraceptive methods should be widely extended.

The report is generally a very useful summary of recent information on birth control, although it inevitably leaves the reader with the feeling that both the methods applied and the means of measuring their success or failure remain extremely inexact.

Last Week's Conference.

A conference, organised by the National Birth Control Association, was held in London from May 20th to 22nd at the Caxton Hall. The object of this conference was to place before medical officers of health, representatives of local authorities, and other interested persons who might wish to create facilities for giving advice on birth control in accord-

[1] 1931. Obtainable from hon. sec., 26, Eccleston-street, London, S.W.1. Pp. 76. 2s.

ance with Memorandum 153/M.C.W., of the Ministry of Health, the most recent information forthcoming from laboratory research and from the analysis of the statistics of birth control clinics. There took place four sessions. At the first, held on Friday afternoon under the chairmanship of Sir Thomas Horder, the President of the Association, a summary was given of researches which may yield the contraceptive methods of the future. Prof. Lancelot Hogben and Mr. C. W. Bellerby outlined the relevant work done up to date on temporary sterilisation by hormonic methods, and Dr. L. W. Cann gave an account of methods by which a similar result may prove to be obtainable by the injection of spermatoxins. On Saturday morning a session was devoted to spermicidal preparations and their effects. Dr. C. P. Blacker began by describing from the chair the steps by which the researches conducted in the last four years by the speakers who were to follow him were initiated by the Birth Control Investigation Committee. These researches were planned with a view to discovering a really efficient spermicidal preparation which would enable the woman to dispense with the use of rubber occlusive appliances. Mr. J. R. Baker, D.Phil., then described the work he has recently done in collaboration with Mr. J. M. Gulland, D.Sc., which resulted in the discovery of the very high spermicidal power of quinols and quinones. The biochemical action of these substances and their derivatives is technically discussed in a valuable paper by Dr. Gulland in the *Biochemical Journal* (1932, xxvi., 32). Six of these have been discovered which are capable of killing in the course of half an hour guinea-pig spermatozoa in the extraordinarily dilute concentration of 1/52,200. Prof. H. W. Florey gave an account of his recent work on the vehicles or bases in which the chemical spermicide must be incorporated. It has been proved that these bases can exert a contraceptive action by mechanically impeding the ascent of spermatozoa into the uterus. Lastly, Dr. C. I. Voge described some of the spermicidal preparations with which the market has recently been flooded in Germany, the United States, and this country. Over 100 of these are now obtainable.

In the course of the afternoon session, under the chairmanship of Dr. Killick Millard, a discussion took place of the methods now in use at clinics. No new data have been collected and analysed since the publication of the fourth report of the International Medical Group for the Investigation of Contraception referred to above, which remains the most complete summary of our existing knowledge that has yet appeared. Mrs. Enid Charles, Ph.D., gave a preliminary account of the analysis of three sources of statistical material which she has undertaken, the salient outcome of which confirms a finding of the Cambridge birth control clinic that the sheath, when properly used, is the most reliable of all methods.

On Sunday morning a discussion took place on the Gräfenberg ring, under the chairmanship of Sir Humphry Rolleston. Papers were read by Mr. H. M. Carleton, Ph.D., who has placed such rings in the uterine horns of over 100 rabbits, and by Dr. Helena Wright. Dr. Carleton described an interesting and important finding that silver may be chemically attacked in the uterus so as to form silver sulphide, the ring becoming, in the process, brittle and liable to break. The general consensus of opinion was that the Gräfenberg silver ring is a dangerous and unreliable contraceptive, and that if intra-uterine rings are to be used at all for contraceptive purposes, they should be made of gold, which does not form a sulphide, and not of silver.

The chairman informed the meeting that the National Birth Control Association was prepared to arrange a similar conference next year, and, if desired, in subsequent years, and a unanimous desire was expressed that this should be done. Since these conferences will be non-propagandist in aim, and will be limited to the presentation of new information arising from laboratory research and clinical experience, they will certainly prove useful to medical practitioners who are interested in birth control in an administrative or private capacity.

The Seventh International Conference.

The proceedings of the Seventh International Birth Control Conference organised by Mrs. Margaret Sanger and held at Zürich in September, 1930, an account of which appeared in THE LANCET (1930, ii., 650), have been issued in book form.[1] The volume is divided into four parts. The first contains a discussion of various contraceptive methods, including the vaginal and cervical pessaries, the intra-uterine silver ring, and various soluble preparations.

Sections are included dealing with temporary sterilisation by biological methods, and permanent surgical sterilisation. The second part contains a discussion of abortion, and the third consists of reports from birth control clinics in the United States, England, Germany, Russia, Austria, Holland, Denmark, India, China, and Japan. English readers will be interested in an account of the Wives' Clinic at Sholapur, founded by Captain A. P. Pillay in 1929. The latter writes that despite the antagonistic influence of Indian religions, the interference of the mother-in-law even in matters relating to the marital relations of their sons and their wives, the prevalence of polygamy and the fatalism which characterises the Indian outlook on life, "our experience has convinced us that the subject can be popularised in this country as easily as in other countries, provided that funds are available." The fourth and last part of the volume consists of a lucid and impartial summary, compressed into 10 pages, of the first three parts, by Dr. Hannah Stone. The perusal of this book will convince the reader of the progress which the birth control movement has made in this country compared with continental countries. It would indeed appear that one of the objects in Mrs. Sanger's mind in organising the conference was to educate the medical profession in Germany on this subject. The discussions which took place at the different sessions are reported verbatim. An unduly large part in these was taken by German speakers, who were somewhat verbose. The papers on research and the analyses of clinic statistics furnished by the English and American delegates proved to be much more thorough and comprehensive than those forthcoming from any other country. From this book there will not be discovered any new contraceptive method, and little will be gleaned that was not previously known. The conference is likely to attain to historic rather than scientific importance. The translation of the German papers and speeches and the general editing of the proceedings have been very well done.

A Physician's Manual.

For a long time a need has been felt for a book on contraception written not for the layman—many such works exist already—but for the doctor. This need is adequately met by a volume which first appeared in the United States.[2] The author recommends a combination of diaphragmatic vaginal pessary, spermicidal ointment, and douche. The size of pessary most often fitted is of a diameter of 70 mm. In a total of 1014 cases, 790, or 78 per cent., were fitted with such pessaries, and 222, or 22 per cent., with cervical pessaries which were used in cases of retroversion and cystocele. The average length of time during which the appliance was used was between one and two years—a somewhat short period for a satisfactory evaluation. Out of a total of 740 women advised by her, Dr. Konikow kept in touch with, and had reports of, 397, and lost touch with 343. Among the 397 women with whom she

[1] The Practice of Contraception. Edited by Margaret Sanger and Hannah M. Stone. Baltimore, U.S.A.: Williams and Wilkins Company. Pp. 316. $4.

[2] Physician's Manual of Birth Control. By Antoinette F. Konikow, M.D. London: Baillière, Tindall and Cox. 1931. Pp. 245. 12s. 6d.

kept in touch, there were 18 failures or cases of unwanted pregnancy—12 unaccountable, and six due to an omission of some part of the technique. This figure compares somewhat favourably with the corresponding figure of 5 per cent. of failures for British birth control clinics.

The book is clearly written and is well illustrated by diagrams and drawings. It is probable, however, that the author under-estimates the value of the sheath as a contraceptive method. She states that her practice shows a high percentage of failures with the use of this method, but she does not specify, in an otherwise full statistical supplement, what this percentage is.

THE DOCTOR AS TEACHER.

AT a meeting of the London Jewish Hospital Medical Society on May 12th, Dr. L. Phillips read a paper in which the doctor was considered as a factor in the movement for public enlightenment. Such activity was almost entirely a modern development. Bacteriology had made manifest the importance of cleanliness in health, a simple measure which could be made effective in every home. Tuberculosis, cancer, and venereal disease were instances of diseases being countered by public campaigns of enlightenment, led and inspired by doctors, as were also the "open-air," "sunlight," and "dress-reform" movements. Maternity and infant welfare centres and school inspection afforded means of direct instruction; and the public lecture, the press, the screen, and the wireless were being more and more extensively utilised. Courses of instruction in health matters were now regularly arranged by many organisations. These activities revealed a change in the mutual relationship of doctor and community. The former was ceasing to regard himself merely as a professional healer of individual ills, plying an exclusive craft; the latter was ceasing to invest the doctor with a priestly halo of mysterious omnipotence. Avowing himself a man of science with frankly confessed limitations, and dispersing the mist of superstition and ignorance which still enveloped popular knowledge of health and disease, the doctor was being less exposed to condemnation and was rising in public esteem. A lessening demand for the inessential was putting efficiency before the bedside manner, and the realisation that the team was the true unit of modern medical practice was contending with the desire for the traditional "personal touch." By satisfying the general desire for enlightenment in health and disease the doctor was exercising a powerful influence in the direction of human progress.

DERMATOLOGY AS AN OUTPOST OF MEDICINE.

IN the fifth Malcolm Morris memorial lecture, delivered last Monday at the Royal Society of Arts, Sir Ernest Graham-Little showed how the position of dermatology in relationship to general medicine had changed out of all recognition within our own generation. He congratulated himself on having been trained in the French school of dermatology at a time when that school was largely overshadowed by its great German rival.

The Austro-German school, founded by Hebra, which reigned through the latter part of last century, attached far more importance to external than to internal causations of skin diseases, but the contemporary French school anticipated modern theories in the importance which it ascribed to general systemic causes. Louis Brocq, in his classical work published in 1907, divided these diseases into two main groups: those which he called "true morbid entities"—i.e., specific diseases of the skin, with an ætiology chiefly external, and a larger group of diseases of the skin which he claimed should be regarded as "cutaneous reactions" to more general causes. This highly philosophic conception became fruitful of new and important modern discoveries, centred round the phenomenon known as "allergy."

The physiological functions of the skin had, Sir Ernest said, become much more understood and had assumed far greater importance within the last few years. It was too often forgotten that the skin was in many senses the largest organ of the body, acting as a protecting medium between the body as a whole and its environment. Physical health was largely a matter of regulating the influences affecting the surface of the body and its movements. It was not therefore surprising that the French conception of skin diseases, as being in the large majority of cases a "cutaneous reaction to general conditions," had in recent years received so great an impetus. The natural corollary of such conceptions was that dermatological eruptions had often become pointers for the recognition of systemic disorders, of which they were indeed only one manifestation. In conclusion Sir Ernest spoke of an endeavour some years ago to persuade the Senate of London University to allow the M.D. examination to be taken in dermatological medicine, thus bringing it into line with other special branches of medicine and surgery in which this is allowed. A member of the Senate then argued that the "cuticle," as he called it, could not compare in importance with the organs of the body in which specialisms were recognised. Yet the skin was, in fact, one of the most important of our means of defence against disease, and its disorders one of the most valuable indications of general illness. The study of dermatology was of essential importance to the medical student, and should be a compulsory item of the curriculum.

JOHN HEAVISIDE.[1]

WHO was John Heaviside? In chronicles of the beginning of the nineteenth century, or thereabouts, his name not seldom occurs, and as he was an interesting person, Dr. G. C. Peachey has done well to compile a little account of his life. A pupil of the famous Percivall Pott, of St. Bartholomew's Hospital, he failed to secure election to the staff of this institution, in spite of his important patronage, for the post which he contested with Abernethy fell to his distinguished rival. None the less, Heaviside attained to a great professional and social position, and it was his fashionable status that led him to be associated with the notorious duel between Colonel Montgomerie and Captain Macnamara, when Montgomerie was shot through the heart, and Macnamara was arrested for murder. Heaviside was the doctor in attendance, and was later taken into custody as an accessory to the crime. Heaviside defended himself successfully, and evidence was given in his favour by the great Nelson among other distinguished persons. Dr. Peachey quotes the following lines from *Nugæ Canoræ*, which indicates the notoriety of the circumstances:—

> This Surgeon so great,
> Was up early and late,
> To tend accidents bloody and cruel;
> Tie artery or vein,
> Or extract from the brain
> A chance bullet, when shot in a duel.

As far as Heaviside was concerned the jury brought in a verdict of "not guilty," their view clearly being that if duelling continued to go on, a doctor had better be in attendance to mitigate the evil. Heaviside made an extraordinary collection of curiosities and monsters, pathological preparations, casts of faces, and of miscellanea, often rubbish, but including books, manuscripts, paintings, and drawings. He became surgeon-extraordinary to George III., and was elected to the Royal Society on influential medical backing.

[1] John Heaviside, Surgeon. London: St. Martin's Press. Pp. 50.

BOVEY TRACEY AND DISTRICT HOSPITAL.—This new hospital, which has cost £3300, all of which has been raised, was opened last week by Mrs. Trelawny. The building comprises four wards, a theatre, and quarters for the matron and staff.